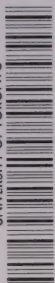


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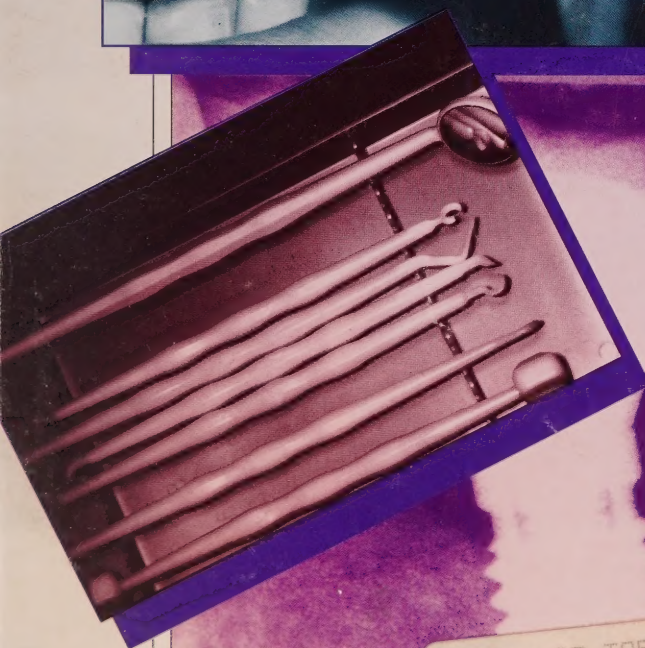
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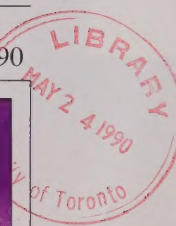
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Spring 1990



**DENTAL
IMPLANTS**

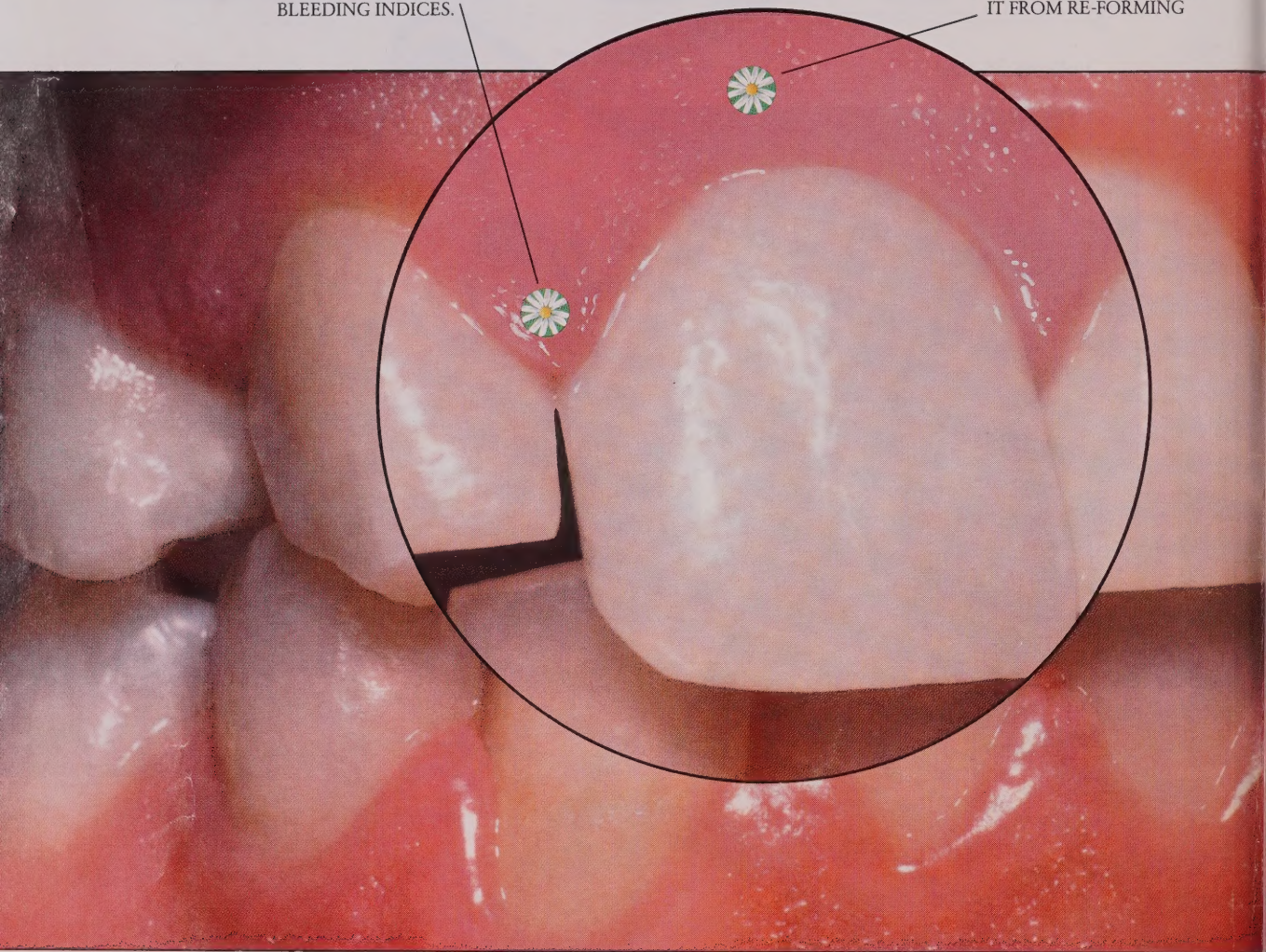
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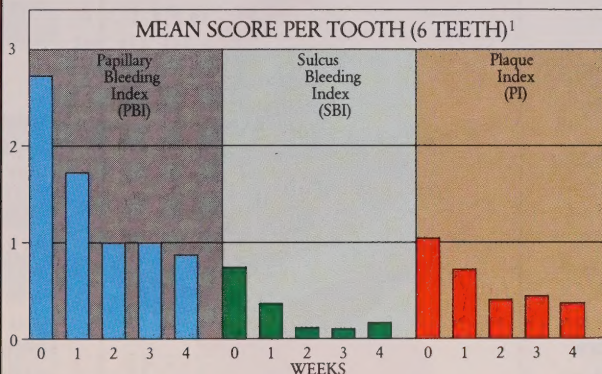
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¹ Klewansky, P. and Vernier, D. Sanguinaria and the control of plaque in dental practice. Compendium of Continuing Education in Dentistry. Supp. 5, S94-97, 1984.
² Data on file.



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¹Case studies include: The Finnish Xylitol Study, 1982-1987; The French Polynesian WHO Study, 1981-1984; The WHO Hungarian Study, 1981-1984; The Montreal Chewing Gum Study, 1985-1987; University of Michigan Study, 1988.

For more data write to: Xylitol Information, Warner-Lambert Canada Inc., 2200 Eglinton Avenue East, Scarborough, Ontario M1L 2N3.

[†]Reg. TM/M déposé. Warner-Lambert Company, Adams Brands.

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Marilyn Goulding, RDH, BSc
Editor

Dear Readers,

— a bouquet to all of you who took the time to return those readership request survey forms. Although there were a few complaints, "Not another survey!", there was a hearty response. Here are the results.

- 1) Product Updates — members wanting guidance in use of new products and recommendation of which are the best. (37%)

The approved release of drugs and devices to the market is governed by the federal sector; in Canada by the Health Protection Branch (HPB) and, in the U.S., by the Food and Drug Administration (FDA). There is currently only one drug manufactured and approved for dental use, that being chlorhexidine. It is available in the U.S. "by prescription only" and in Canada, "by dispensation only". The guidelines are set for the public's protection and require strict scientific laboratory and clinical trials in order to provide uncontested evidence of safety and efficacy. Each claim made by the manufacturer must be completely justified by these trials. The dental community itself does provide specific evaluation on currently marketed products through such groups as the C.D.A. and the A.D.A. The "seal of approval" issued by either of these organizations is only to affirm acceptance of certain claims made by the manufacturer.

Manufacturers do not require either of these sanctions to market their

products. You will note that in many cases the A.D.A. seal is given to products based upon fluoride content and not specifically to the major marketing claim, examples being, the anti-tartar claims on some toothpastes or the gingivitis-reducing claims on rinses. The A.D.A. has issued only one seal for an anti-gingivitis claim, to Listerine; the C.D.A. has not, as yet, recognized any product for anti-plaque or anti-gingivitis claims.

It is not the mandate of the CDHA to evaluate and recommend specific products, however, I do feel that Probe can present abstracts on recent research, offering you the most current findings on the status of certain products used in clinical trials. The first of these abstracts is published in this issue and can continue to be a regular feature.

- 2) Education Update — members wanting information on new technology, methodology and research. (30%)

Again, the same challenge arises with this request. The CDHA cannot recommend any one technique or regimen of treatment, however, we can present pertinent literature reviews and clinical perspectives. In this issue you will find an excellent review of the literature and current research on dental implants by Dr. J. Dymtryk from the University of North Carolina. Dr. Dymtryk presented a paper on the subject, at the most recent meeting of the American Academy of Periodontology in Washington, which will soon be

published in the Journal of Periodontology. His inclusion in this publication is derived from that research and others' in the field. We also have a specific clinical perspective from Leanne Carlson-Mann, a practicing dental hygienist involved daily in the maintenance therapy for implant patients.

If these are helpful we would like to continue to publish the literature reviews. If you have a particular area of interest please contact me through Central Office and I will provide the appropriate periodicals, the guidelines, and the personal counsel necessary for you to submit your own review on any one topic. We welcome new authors.

- 3) Political Update — members wanting information on what's happening across the country with the profession and in our association. (10%)

Probe will continue to provide its excellent coverage of nation-wide events and semi-annual board meetings (page 11). You may also find the new section, on personal interviews with high-profile dental personalities, expressive of opinions and viewpoints on certain political aspects in the dental industry. In the last issue we offered another new section entitled **Point/Counterpoint** which is meant strictly as a vehicle for opinion from any of you who have always wanted a chance to outline a good argument. I'm counting on your fiery submissions to keep this section in print.

- 4) Practice Management — members wanting information on ways to improve their productivity and delivery of services. (10%)

These types of articles are submitted less frequently than the scientifically-based efforts.

However, we do have one in the works on the productivity levels when working with a full-time assistant and also upcoming information on a unique service offered by an enterprising periopactice hygienist in Calgary.

- 5) Alternatives — members wanting information on where we can go from here. (7%)

With the imagination and drive recognized in our profession there should be no shortage of interesting submissions on avenues open to hygienists. If you are currently involved in something in which your hygiene background has proved helpful, pick up the phone and let me know. I'd love to work with you drafting an article about it.

- 6) Specialties and Compromised Care — members wanting information on specific disciplines (ortho, pedo, etc.) and compromised patients. (6%)

For these types of articles we need to hear from those members working in specialized situations. There have been a number of excellent seminars presented in Canada recently and consequently we do have an upcoming periodontal review by Salme Lavigne, the co-ordinator of the dental hygiene program from Confederation College in Ontario, and one on handicapped patients by Ellen Brownstone from the University of Manitoba (page 32). One general statement, Probe, unlike many other journals, is written by its readers. Many of the requests were worded as "You should do an article on this, or, you should provide that". The focus is, more appropriately, "We should".

In order for the "we should's" to become the "we did's", there must be a great many more "I will's"! Some of you had strong feelings about what Probe should provide. You are Probe! Many of you had excellent ideas. There is no better way to attain information on a subject than to research it yourself. If the particular article you require is just not appearing, jump in and undertake to write it yourself! Then share it with all of us. The editorial staff is here to provide you with support and counsel in your efforts.

The comment section of the survey was interesting and I would like to address some of the issues raised. It was encouraging to hear that the majority of responses were accolades of praise for the positive development and evolution of Probe. Although I would love to bask in your favour, I have not been part of the publication staff until recently, so, I will pass your praise along to Central Office and the past editor, Fran Cotton. I am now very cognizant of the fact that I have a tough act to follow.

For those of you who wonder why you aren't getting Probe; it is one of your many member benefits and will provide you with the cutting-edge of information in the dental hygiene field, arriving quarterly, at your door, in exchange for your yearly membership fee.

For the woman who thought that Probe should tell her exactly with what and how she should treat her patients, please read the above information on products and methodology and keep in mind; professionals are responsible for keeping themselves current in their respective fields by attending continuing education seminars, conventions, and study groups. Probe is not responsible for your level of professionalism; you are!

For those of you who wondered about our other publication; it is called "Explorer" and is a newsletter, published twice a year, containing

times, dates, and items of interest on the Canadian hygiene front.

For the member who signed herself as "rural and out of it", no, we are not all from big cities. I was in private practice for seven years in northern Alberta, living in Pickardville; now that's rural! I do understand your frustrations and will strive to meet your needs. Don't underestimate what you can do for your association, even from a distance.

For those of you who showed interest in submitting a manuscript, the guidelines are published periodically (see page 29). Keep in mind that Probe is a scientifically-based refereed journal, therefore, any article, whether research or review, must be distributed to a panel of reviewers who will make recommendations accordingly. All material must be referenced from sound resources. Most manuscripts require some revision which is generally outlined to the author based on the reviewers' remarks. Yes, we do accept manuscripts from students, which leads to the next remark.

No, not all authors in Probe are educators. We do appreciate the many submissions from our fine educators across the country. They read the new text books and strive to stay current in new concepts; their positions require it. It is the job of any professional to stay current, therefore any dental professional may submit to Probe.

I would really like to address your each and every request, however, I have worldly restraints such as days with a mere twenty-four hours, a human form which comes equipped with only two hands, and a computer with only four megabytes! What I do promise is a sincere effort, based on your requests and the changing frontier of the profession. Thanks for your input. ■

Sincerely,
Marilyn J. Goulding

RESEARCH UPDATES

SPECIAL NEEDS IN TREATING THE PREGNANT PATIENT

CHICAGO — Women have special needs and considerations that men don't when it comes to dental care, according to Dr. Barbara Steinberg, professor of surgery and assistant director of dental medicine at the Medical College of Pennsylvania. In a presentation at the 130th Annual Session of the American Dental Association, Dr. Steinberg explained why hormonal changes can trigger dental problems in 75 percent of pregnant women.

"We have found that women can suddenly find themselves with severe inflammation of the gums during their pregnancy," she said. "Dental plaque, composed of bacteria, multiplies at an accelerated rate when exposed to the increased levels of hormones associated with pregnancy."

Gingivitis, inflammation of the gums, is especially common from the second to the eighth month of pregnancy. The gums are red, puffy, tender and may bleed when the teeth are brushed. Dr. Steinberg stressed good oral hygiene habits that include frequent brushing and flossing to remove the dental plaque that causes gingivitis.

"Pregnant women should not avoid dental visits during their pregnancy," Dr. Steinberg said. "Most routine dental procedures can be performed safely during the second three months, or trimester, of pregnancy."

During the first and third trimesters, emergency care and cleaning of the teeth are the only procedures that should be performed. Extensive dental or surgical procedures should be postponed until after pregnancy.

According to Dr. Steinberg, pregnancy is not the only time a woman is more susceptible to dental problems. "Hormonal changes occur throughout a woman's life from puberty to menopause. It's important for her to know that each of these stages of her life, when her body is undergoing changes, can affect her dental health."

THE DENTAL 'WAVE OF THE FUTURE' MAY BE IN SOUND WAVES

CHICAGO — Phonophoresis, or high frequency sound waves, may eliminate the need for anaesthetic injections during dental procedures, a researcher told the 130th Annual Session of the American Dental Association.

Dr. Stanley Malamed, professor of anaesthesia and medicine at the University of Southern California School of Dentistry, reviewed several techniques designed to make dental procedures completely pain free.

"Phonophoresis is just entering the research phase," said Dr. Malamed. "However, if trials are successful, it will direct an anaesthetic into the oral tissue through high-frequency sound waves instead of a needle."

Dr. Malamed also addressed electronic dental anaesthesia (EDA), a new form of anaesthesia currently being used that uses electronic impulses to block the pain signals the brain.

"EDA provides very effective anaesthesia for restorative dentistry, periodontal treatment, crown and bridge work, and TM disorders. Although local anaesthetic is still the most effective technique right now, EDA is a viable alternative, especially for needle phobics," said Dr. Malamed.

The American Dental Association estimates there are more than 10 million dental phobics who avoid dental visits at all costs. According to Dr. Malamed, one of the biggest reasons for dental phobia is the fear of pain.

We find that dental phobics usually are men between 16 and 40 years of age, he noted. "They are less likely than women to be open about their dental fears and are more prone to fainting."

Dr. Malamed concluded, "Pain control is part of the everyday practice of dentistry and the end result of these new developments and changes will be a more comfortable experience for our patients."

DENTAL IMPLANTS COME OF AGE

CHICAGO — Dental implants, permanent replacements for missing teeth, have come of age, an oral surgeon told attendees at the 130 Annual Session of the American Dental Association.

"Not only are we seeing a 90 percent success rate over 20 years, we are seeing a steady increase in the number of patients asking for and receiving implants," said Dr. Paul Kaufman, associate professor of oral and maxillofacial surgery both at New York State University School of Dental Medicine and the State University of New York at Stonybrook.

Dental implants attach replacement teeth directly into the bones of the jaw and can be a viable alternative to conventional bridges and dentures.

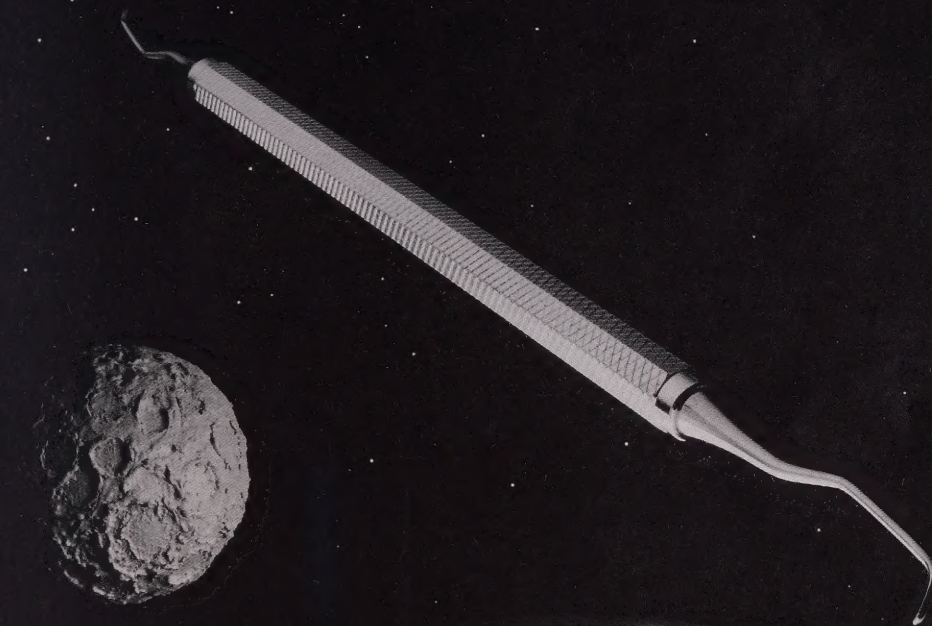
"Not every patient is a candidate for implants," he cautioned meeting attendees. "The quality and quantity of the patient's bone and other conditions in the mouth will affect the options available to that patient."

Pre-surgical screening and planning are critical to the success of the procedure, according to Dr. Kaufman. The patient's medical history and psychological profile also contribute to the success of the implant procedure.

Dr. Kaufman cited the National Institutes of Health prediction that as many as 300,000 implant procedures may be performed in the United States by the year 1992.

"Between 20 and 30 million Americans currently function with no natural teeth at all in their upper and/or lower jaws. Implants offer these people a functional and gratifying opportunity to improve the quality of their lives," he concluded.

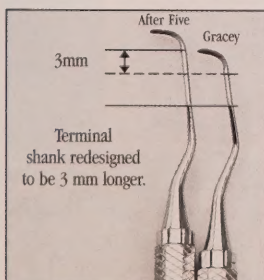
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"Foolish and philosophically absurd," his outraged detractors cried. Some four hundred years ago, Galileo was hauled over the coals and charged with heresy for challenging the fashionable ideas of the time. His crime was in promoting the ridiculous theory that the earth moved while the sun remained stationary. ¶ Flying in the face of conventional wisdom requires a resoluteness of purpose and a pretty thick skin. And nobody knows that better than the makers of Listerine. ¶ Listerine continues to encounter its fair share of raised eyebrows among the traditionalists of the dental community. After all, there is still resistance to the notion that an oral rinse can play a significant role in supragingival plaque and gingivitis reduction. ¶ But if there are those among you who are still taking a cautious wait-and-see attitude, perhaps you should know that the American Dental Association doesn't share your scepticism. ¶ In fact, Listerine is the only over-the-counter rinse to have satisfied the ADA guidelines and to have received its Council on Dental Therapeutics' seal of acceptance. ¶ Clinical studies conclusively show that as an adjunct to your professional care, and your patients' daily oral hygiene, Listerine will further reduce plaque by as much as 34%^{1,2,3,4}. ¶ The scientific explanation is a simple one. Because Listerine is a broad spectrum bactericidal rinse: it destroys the major oral microorganisms found in dental plaque. ¶ There are no substitutes for brushing, flossing and regular dental visits. However, Listerine can offer your patients who need extra help an easy and effective way to further reduce plaque and gingivitis. ¶ Now, do we still hear the purists tut-tutting?

ACCEPTED BY THE ADA TO HELP
PREVENT AND REDUCE SUPRAGIN-
GIVAL PLAQUE AND GINGIVITIS.



Policy on Access to Care

On February 4th 1990 at the Interim Meeting of the Board of Directors the Canadian Dental Hygienists' Association adopted the following policy:

"In the interest of oral health of the Canadian public, the Canadian Dental Hygienists' Association is

committed to facilitating access to quality preventive oral health services provided by Dental Hygienists."

Armed Forces 75th Anniversaries

"All serving and former members as well as friends of the Dental Corps are invited to attend the 75th

anniversary celebrations to be held in Ottawa 26-27 August 1990 in conjunction with the CDA/CDHA Convention. For registration write to:

Director General
Canadian Forces Dental Services
National Defence Headquarters
Ottawa, Canada K1A 0K2
Attention: Major Tom Mountain
or call (613) 996-7494".



TAKING THE STEPS TOWARD ENSURING
QUALITY DENTAL HYGIENE CARE
A C.D.H.A. WORKSHOP

Coming to Your Province in 1990!

You can start the new decade with a renewed sense of professional growth directed toward improving the quality of care that you provide for your patients. Across Canada, the C.D.H.A. will be offering a participatory workshop utilizing the recently developed *Clinical Practice Standards for Dental Hygienists in Canada*. By participating, you will develop a greater understanding of how to:

- Assess your current practice activities according to the published standards.
- Target areas for change or improvement.
- Use new strategies for acquiring knowledge and skills.
- Develop a personal plan of action to improve the quality of dental hygiene care you provide.
- Implement, monitor and evaluate your plan of action.

When held in February in Winnipeg, Manitoba dental hygienists said that the workshop gave them the opportunity to:

"... learn about my weak points in dental hygiene practice and how to do something about it."

"... set goals for myself."

"... share ideas with other dental hygienists."

"... compare ourselves, our standards and work experiences ... gives us motivation."

If you want to provide quality care, are interested in growing professionally and are ready to take action, keep your eyes open for more information regarding the workshop to be held in your area. ■



L. to R.: Caroline Bishoff, Evelyn Vandenberghe, Robin Watson, Hamet Gardner-Rosenbaum.



"Groupwork." L. to R.: Kathy Kost, Marlene Szymczyzna, Loree Christianson, Diane Girardin.

Semi-annual Meeting Report/Feb.1-4/90

From blizzards in Atlantic Canada, ice storms in Ontario, and freezing temperatures in the west the board members came, converging on the capital to attend two major events; the semi-annual board meeting of the CDHA and possibly a little "Winterlude" fun at Ottawa's well-known winter festival.

Throughout the Thursday evening reception, carloads of weary travellers arrived, weighted down with briefcases and skates, in anticipation of the week-end's activities.

Friday began with a general planning session where each council was briefed as to the weekend expectations. The groups dispersed to separate quarters and tackled their lists. After dinner everyone came back together to report on the progress. As editor I was free to attend each council's meeting and discuss with them any of their topics related to the journal or information necessary for publication to you, the member. I am continually impressed by the organization and commitment of these individuals who give so much of their time, their effort, and their priorities to serve my and your personal interests as a dental hygienist. We should all be proud of, and grateful to, each and every one of them. Being relatively new to CDHA I am just beginning to understand the complexities that are entailed in the position of the average board member. They all work hard and take their jobs seriously but, due to the structure of the council system, they work in groups and support each other well. There is much late-night brainstorming and things really get done! However, we can't work them too hard and, as you can see by the photo, we did get out of the board room on Saturday night for some Winterlude activities.

Back to work on Sunday brought us the action plans from the Councils which I have included for your information. The evolution of our national association is a slow and painstaking process but the wheels of progress do continue to turn and strides are being made on our behalf.

Sessions ended in the afternoon and Executive Council sent us packing while they stayed on until Tuesday to compile the weekend's work and come up with the budget to implement all the plans necessary for our continued growth.

A lot of work, yes, but a lot of satisfaction and pride to be a part of it all.

The next meeting is in Winnipeg, in June/90, in conjunction with the first national Dental Hygiene Professional Conference and the Educators' Workshop at the University of Manitoba. Hope to see you there.

The next year is going to be a busy one with Council activities focused in the following areas:

Member Services Council

- To plan and implement annual membership campaign.
- To maintain close liaison with the membership committees in each province.

- To develop and distribute information packages to student members.
- To plan the 1990 Professional Conference in Winnipeg and begin work for 1991 in Atlantic Canada.
- To develop a Benefit Services Directory for members.

Public Relations Council

- To develop and promote a National Dental Hygiene Campaign with a focus in October 1990.
- To develop a roster of speakers on dental hygiene issues.
- To develop a media relations campaign.
- To develop a Needs Assessment Survey on community oral health activities by dental hygienists.
- To maintain and further develop corporate relations.
- To develop and distribute a resource catalogue on audio-visual aids.
- To produce a display on C.D.H.A. for use at conventions and meetings.

Professional Development Council

- To implement and evaluate a series of eight Practice Standards Workshops to be held in the Spring of 1990.



- To promote Quality Assurance through additional workshops using the developed materials.
- To develop and conduct an Educator's Workshop to be held in Winnipeg in June 1990.
- To award the 1990/91 Research Fellowship.
- To plan a workshop on Community Dental Hygiene to be held in June 1991 in Atlantic Canada.

Professional Development Council

- To study and plan for future census dental hygienists' survey.
- To prepare and distribute an annotated bibliography summarizing the 1987 survey.
- To develop a resource handbook on regulation of dental hygienists in each province.
- To continue development of a National Certification Examination process for dental hygienists in Canada.
- To develop expertise in government relations and prepare workshops for presentation across Canada.



Nutrition Is a Feminist Issue

OTTAWA — "Despite a century of emancipation and the endless responsibility of ensuring that loved ones are properly fed, women often remain the poorest fed members of society," asserts Louise Lambert-Lagacé in the October issue of *RAPPORT*, the quarterly publication of the National Institute of Nutrition. Lambert-Lagacé, dietitian and author of several popular books on nutrition, blames the problem on restrictive diets and poor food choices due to time constraints, overwork and isolation.

Inadequate overall food intakes often reflect a pervasive female preoccupation with dieting and thinness.

"Fat is still a feminist issue," writes Peggy Edwards, Director of Special Projects for PARTICIPaction, in the same publication. Two out of three women are chronic semi-fasters. Anorexia and bulimia are female conditions 95% of the time. "The cultural demand for female thinness is propagated through four powerful industries: fashion, fitness, mass media and tobacco," says Edwards. "When this kind of societal pressure is combined with the use of food to nourish loneliness or cope with overwork, women get stuck in a frustrating and dangerous dilemma — wanting to be thin, but needing to overeat."

"To remedy this dilemma," says Nancy Schwartz, President of the National Institute of Nutrition, "we need to promote personal and societal acceptance of variation in body size, and create an environment that supports healthy eating, regular physical activity and realistic body images for women."

The National Institute of Nutrition, a non-profit organization dedicated to advancing the knowledge and practice of nutrition in Canada, believes that a coordinated policy and program response to the growing issue of women and nutrition is central to improving the health of all Canadians.

For further information, please contact:

Nancy E. Schwartz
National Institute of Nutrition
(613) 725-1889

Peggy Edwards
(613) 729-7533



High Fat-Diets May Increase Chance of Developing Cavities, Research Shows

High fat diets can not only lead to cholesterol problems but also may increase the chances of developing dental cavities, according to a collaborative study between two dental schools.

Dental researchers at the University of Medicine and Dentistry of New Jersey (UMDNJ) and the University of Washington School of Dentistry in Seattle have found that patients on high-fat diets have higher levels of lipids — fatty substances — in their saliva than those on low-fat diets. In turn, they also have more cavities.

"In past studies, we found that the patients whose saliva contains high levels of lipids tended to have more cavities," said Dr. Bronislaw Slomiany, director of the Dental Research Center at the UMDNJ-New Jersey Dental School. "Now, we have found that high-fat diets can lead to an increase in lipids in the saliva. This suggests that high-fat diets may increase the chance of developing cavities."

Researchers are attempting to determine why the high content of fats in saliva coincides with a high rate of cavities. "As our studies continue, we hope to find this out," said Dr. Slomiany.

The researchers analyzed the saliva of 50 patients — 25 who were placed on high-fat diets and 25 on low-fat diets. High-fat diets consisted of more than 35 percent fat content while low-fat diets contained between 18 to 22 percent fat.

Those on high-fat diets were found to contain eight milligrams of lipids per 100 millilitres of saliva, whereas those on low-fat diets contained four milligrams of lipids per 100 millilitres of saliva, or less.

The dental researchers are also trying to develop a simple saliva

test to reliably measure cholesterol levels as an alternative to blood sampling.

"Measuring cholesterol levels from saliva samples should be quicker and less invasive than tests that require blood samples," said Dr. Slomiany, professor of oral pathology, biology and diagnostic sciences at the dental school and professor of medicine, and biochemistry and molecular biology at the UMDNJ-New Jersey Medical School in Newark.

Researchers from the UMDNJ-New Jersey Dental School, in addition to Dr. Slomiany, are Dr. Amalia Slomiany, professor of oral pathology, biology and diagnostic sciences and professor of medicine, and biochemistry and molecular biology at the UMDNJ-New Jersey Medical School; and Dr. V.L.N. Murty, associate professor of oral pathology, biology and diagnostic sciences.



UMDNJ Researcher Studies Gum Disease As Possible Warning Sign of AIDS

Advanced forms of tooth and gum disease are being studied as possible early warning signs of AIDS at the University of Medicine and Dentistry of New Jersey (UMDNJ).

Dr. Patricia Murray, associate professor of periodontics at the UMDNJ-New Jersey Dental School, is examining drug abusers who have AIDS to determine the prevalence of periodontal disease in this patient population. She conducted similar research on the homosexual population last year at the University of California at San Francisco School of Dentistry.

"In San Francisco, we found we were treating a large portion of

homosexual HIV positive patients who had advanced periodontal disease," said Dr. Murray. "At least 30 percent of those patients had advanced periodontal conditions. We developed treatments to eliminate periodontal disease and the associated threat of infection, which could prove fatal to patients with damaged immune systems."

In those studies, Dr. Murray found that the type of periodontal disease found in HIV-positive patients differed from that encountered by the general population. The periodontal disease suffered by HIV-positive patients is a faster moving condition, generally accompanied by oral lesions on the mouth within the first two weeks.

At UMDNJ, Dr. Murray has expanded her research to other AIDS populations to determine if the periodontal disease can be considered as an early warning sign of the HIV virus.

Dr. Murray is testing HIV-positive drug abusers in the school's Special Services Clinic for advanced periodontal disease. The clinic is the state's only dental clinic that specifically treats patients with AIDS and other infectious diseases.

Symptoms of advanced periodontal disease include chronic pain originating from the jaw, exaggerated gum recession and bone disintegration, resulting in the loss of teeth.

If untreated, periodontal disease also leads to infection that could prove deadly to AIDS patients, whose immune system leaves the body unprotected.

In San Francisco, Dr. Murray had success in treating aggressive periodontal disease in AIDS patients by removing the dead tissue and irrigating the gums with antiseptics and antibiotics. New tissue will eventually grow back to cover the bone.

"Although diseased bone will not regenerate, the patient will be pain-free," she said. "Patients must also help by brushing properly and regularly to keep the teeth and gums free of bacteria and infection."



ADA Voices Concern Over "Whitening" Toothpastes

CHICAGO — The American Dental Association is voicing its concern over several new tooth whitening/bleaching products which have recently entered the market.

The ADA Council on Dental Therapeutics is aware of the existence of four brands: Epi-Smile, White and Brite, Whiter Teeth and Smile White.

"We have very little information on the ingredients as used in these products and no information on their safety," said Dr. Kenneth Burrell, council secretary.

The Council has made inquiries to the U.S. Food and Drug Administration and to the manufacturers on product content and safety but has not received significant information to date.

"We are concerned about products that use oxygenating agents as active ingredients. There is some evidence that indicates that regular use of oxygenating agents in the mouth can cause irritation to the soft tissues," Dr. Burrell said.

According to Dr. Burrell, these products may really work and be safe to use but at this point there is not enough evidence to make that conclusion. To date, no such products have been submitted for inclusion in the Council on Dental Therapeutics Seal of Acceptance

Program, which requires clinical studies of product safety and effectiveness.

Some of the manufacturers are contending that their product is considered purely cosmetic and does not require FDA approval.

A spokesperson for the FDA said its compliance division is investigating whether these products will be considered cosmetics, drugs or devices under the FDA rules. Cosmetic products have fewer premarket requirements than do therapeutic products.

The ADA is advising consumers to confer with their dentist about tooth discoloration concerns. Professional cleanings and tooth bleaching by a dentist are safe and commonly used procedures that can remove stains and whiten teeth. In more difficult cases, tooth bonding with plastic resins and veneers much like artificial fingernails can be used to improve tooth appearance.

Consumers should also generally look for the ADA Seal of Acceptance when purchasing dental hygiene products. "The Seal of Acceptance is the consumer's assurance that the product has been thoroughly evaluated by the ADA Council on Dental Therapeutics and has been found to be both safe and effective," said Dr. Burrell.



NATIONAL DENTAL HYGIENE WEEK

October 14-20, 1990

C.D.H.A. 1990 Educator's Workshop "One-on-One Clinical Teaching"

June 20th and 21st, 1990 Winnipeg, Manitoba

Winnipeg will be the 1990 site for the Educator's Workshop. Following the workshop, the C.D.H.A.'s first Professional Conference is being held jointly with the University of Manitoba, School of Dental Hygiene's 25th Anniversary Celebration.

PROGRAM DESCRIPTION

Effective one-on-one clinical teaching is a cornerstone of quality dental hygiene education. This day and a half workshop will provide an opportunity for you to improve your teaching skills in this vital area of instruction. The format is participatory, one in which the opportunity will be provided for you to practise new teaching skills by role-playing with current dental hygiene students.

WORKSHOP TOPICS:

- *Concerns of Clinical Teaching
- *Clinical Teaching Philosophy
- *Principles of Learning
 - *Questioning
 - Presentation
 - Microteaching
 - *Feedback
 - Presentation
 - Microteaching

WORKSHOP FACILITATOR

John Kleffner, Ed.D.
Department of Instructional Development
University of Texas Health Science Centre at San Antonio
San Antonio, Texas

Dr. Kleffner, a faculty member at San Antonio's Health Sciences Centre since 1973, has extensive experience offering Teaching Skills courses to both dental and medical educators. His areas of expertise include learning and evaluation, instructional methods, and curriculum and course development.

LOCATION: Hotel Fort Garry

REGISTRATION FEE:

- \$80.00 Full-time faculty
- \$60.00 Part-time faculty

REGISTRATION INFORMATION TO BE OBTAINED FROM:

CANADIAN DENTAL HYGIENISTS' ASSOCIATION
1018 Merivale Rd. Ste. 201
Ottawa, Ont.
K1Z 6A5
1-800-267-5235

Confused about infection control?

We can help

The amount of information generated today about infection control is overwhelming. To clarify the confusion, ignore the claims and focus on the facts.

FACT: The CDA and CDC have both stated that all heat stable dental instruments should be routinely sterilized between use by autoclave, dry heat or chemical vapor.

FACT: There are many surfaces and instruments in a dental operatory which cannot undergo sterilization. A high-to-intermediate level disinfectant is therefore required. For complete disinfection, you want a tuberculocidal, broad spectrum kill, an EPA and ADA acceptable product, non-corrosive to instruments and as non-toxic as possible.

FACT: Pathex, a potent disinfectant from the Block Drug Company, is a broad spectrum, dual synthetic phenol which is bactericidal, virucidal, fungicidal, pseudomonacidal, and tuberculocidal in just 10 minutes.

FACT: Pathex is intended for use as a surface disinfectant (a unique non-aerosol sprayer bottle is available for this purpose); a holding solution (a special detergent formula starts cleaning action chairside); and for immersion disinfection of semi-critical instruments.

FACT: The combination phenol formulas based on o-phenylphenol (9%) and o-benzyl-p-chlorophenol (1%), when compared with glutaraldehydes, are less corrosive to metal instruments, will not yellow skin or release irritant fumes or odor, and are less toxic.¹

FACT: Pathex is biodegradable.

When all the "noise" is eliminated, so is the confusion. The choice is clear — Pathex for your disinfection needs.

¹ American Dental Association Council on Dental Therapeutics. Acceptance of (synthetic phenol) disinfectant for instruments and equipment. JADA 110 394, 1985



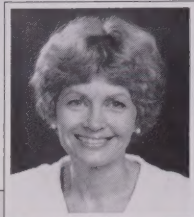
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Pathex

An effective disinfectant solution for dental instruments and devices.

THE CORPORATE SIDE



by Debbie Daniels
CDHA Corporate Relations

THE GLITCH

Our 1990 membership campaign was very generously sponsored by Leeming/ Pacquin, the manufacturers of Plax.

Unfortunately, a "glitch" entered the works and material was distributed to all Canadian hygienists which had not been properly screened by the CDHA campaign committee. The patient information pamphlet, "Plaque, what you don't know can hurt you" stated that "only a dentist can remove tartar".

Additionally, the claims on the product label and literature appear to be not quite credible.

Boy, did we hear about it!!!

On the one hand, we're pleased that you read all the stuff we send you. On the other hand, we sincerely apologize for sending such an offending statement that appeared to have full CDHA approval. It was an embarrassing way for us to learn that with our increased numbers, activities, and complexities we now require a formal screening procedure. It is also gratifying to know that you demand solid research before accepting a totally new concept.

This is not the appropriate column for a discussion on the scientific background of Plax. What we will do is look into the story of how a product, with what appears to be questionable claims on the label, could become so wildly successful in the marketplace. I spoke with

Joanne Belsito, the Marketing Manager for Plax in Canada. Here is the essence of that interview:

DD . . . This is the first time that Plax has sponsored a major project for CDHA. Can you give us a little background on your product.

JB . . . Plax has been extremely successful in the United States since its introduction in 1986. Leeming/ Pacquin, Division of Pfizer, acquired Plax and introduced it to the Canadian marketplace a little over a year ago.

Since Plax was the first dental product that our company had ever marketed, we were somewhat inexperienced and unaware of the important role that dental hygienists play in both product recommendation and patient information.

Sponsoring for CDHA has also been a new venture for us and we have appreciated the chance to become involved.

DD . . . The hygienists were disappointed with some of the wording in your pamphlet "Plaque, what you don't know can hurt you."

JB . . . We apologize for the wording in the pamphlet and especially for omitting "dental hygienists" from the text. At the time this pamphlet was produced, our marketing department was not familiar enough with the role of dental hygienists. We have since stopped distributing this particular pamphlet and are working on a new one. This time around, arrangements have been made to collaborate with the CDHA on this new pamphlet.

We are pleased that you want to be involved with its production.

DD . . . Many of us are uncomfortable with the claims on your label. We would like to see the research documents to validate these claims.

JB . . . It should be noted that the Health Protection Branch of Health and Welfare classifies Plax as a drug product (as designated by the six digit GP number on the product label). As such, all clinical documentation to support claims was thoroughly reviewed and approved by the HPB. Without this review, we would not be allowed to market this product in Canada.

Additional clinical research on Plax is on-going and the results will be published as they become available. More long term, we hope to amass a large enough data base to submit for the CDA Seal of Approval.

DD . . . For such a radically new product, Plax has certainly been successful. Obviously, our patients are buying and using a lot of it. We want to be fair when we're answering their questions. Thank you for addressing our concerns.

JB . . . We welcome your input. We have learned a lot about your profession and have gained respect for your integrity.

In addition to producing the new pamphlet in consultation with CDHA, we are also employing dental hygienists, especially for dental conventions.

Once again, thank you for the opportunity to support the CDHA by sponsoring your membership campaign. Let's keep working together. ■

PROFESSIONALLY APPROVED

AROUND THE CLOCK DRY MOUTH PROTECTION

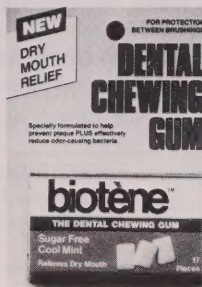


Dry Mouth (Xerostomia) is the hidden cause of cavities, increased plaque and gum inflammation in 30% of all adults. In the worst cases, Xerostomia leads to the inability to eat and speak. Factors contributing to Dry Mouth include: Aging, Sjogrens Syndrome, Stress, Depression, Radiation therapy and over 200 drugs.

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biotène™ ANTIBACTERIAL DENTAL CHEWING GUM



oralbalance™ LONG LASTING MOISTURIZING GEL FOR MOISTURE-POOR GUMS



Biotene™ Dry Mouth Toothpaste contains the Lactoperoxidase enzyme system which is similar to the strong antibacterial system normally found in saliva. These patented enzymes produce an antibacterial agent which penetrates and kills 99% of the bacteria associated with gum disease and tooth decay. **Biotene's**™ antibacterial, low-foaming formula and gentle mint flavor keeps dry tissue protected. Use daily in place of ordinary toothpaste. Also helps the handicapped and the bedridden who can't brush properly.

Biotene™ Dental Chewing Gum replenishes the reduced Lactoperoxidase system found in xerostomia patients. The natural antibacterial action helps stop gum bleeding and bad breath. Fights bacterial plaque even when you cannot brush during the day.

Biotene™ is the only sugar free gum that will not stick to dentures. **Biotene**™ is also recommended for children who chew gum. Naturally sweetened with Xylitol.

Oralbalance™ Moisturizing Gel is a new protective gel that provides hours of relief from oral irritations, itching and burning sensations. **Oralbalance**™ long-lasting moisturizing gel with the **Biotene**™ antibacterial enzymes works better than artificial salivas because it is not a liquid but rather a non-drying gel that remains on oral tissues. **Oralbalance**™ is recommended for patients with minimal saliva flow. Also ideal for mouth breathers and denture wearers.

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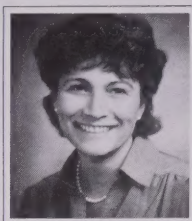
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Conference Speakers



Dr. Irene Woodall

Dr. Woodall is a well known educator, researcher, consultant, Editor of "RDH" and author of "Comprehensive Dental Hygiene Care".



Dr. Jane Fulton

Dr. Fulton is a recognized political force on women's issues and their future place in the health field. She hosts a CBC weekly radio feature, "Health Watch" and is the author of several books including "The Regulation of Emerging Health Care Occupations" and "Health Care in Canada". Dr. Fulton is a Professor of Strategic Management and Health Policy at the University of Ottawa.



Dr. Esther Wilkins

Dr. Wilkins is a respected dental hygiene educator and is best known for her book "Clinical Practice of the Dental Hygienist".



C.D.H.A.'s 1st ANNUAL PROFESSIONAL CONFERENCE

in conjunction with

UNIVERSITY OF MANITOBA'S
SCHOOL OF DENTAL HYGIENE
25th ANNIVERSARY

Winnipeg, Manitoba
June 21-23, 1990



PRE-CONFERENCE — Wednesday — June 20th-June 21st (1½ days)

Educator's Workshop — Hotel Fort Garry

Facilitator: Dr. John Kleffner, Dept. of Instructional Development,
University of Texas, San Antonio

CONFERENCE — Sheraton Hotel — 161 Donald St.

Thursday, June 21

7:00-11:00 p.m. WINE & CHEESE RECEPTION *Manitoba Ballroom*
REGISTRATION

Friday, June 22

8:00-9:00 a.m. REGISTRATION *Foyer*

9:00-12:00 DR. IRENE WOODALL *Manitoba Ballroom*

- Energizing Dental Hygiene: The Decade Ahead and Beyond

12:00-2:00 LUNCHEON *Sheraton A*

- Focus on University of Manitoba School of Dental Hygiene: Presentation of Endowment Plaque to Founding Director,
Prof. Marnie Forgay

2:00-4:00 DR. IRENE WOODALL *Manitoba Ballroom*

- Comprehensive Dental Hygiene Treatment

Saturday, June 23

8:00-9:00 a.m. REGISTRATION *Foyer*

9:00-12:00 DR. JANE FULTON *Manitoba Ballroom*

- New Vision for Health in Canada.
Where Does Dental Hygiene Fit In?

12:00-2:00 LUNCHEON *Sheraton A*

- Focus on C.D.H.A.

Guest Speakers

— DR. ESTHER WILKINS

— MR. HENRY KING, C.D.H.A. PRESIDENT

(Bring your Wilkin's textbook & Dr. Wilkins will autograph it).

2:00-4:00 DR. JANE FULTON *Manitoba Ballroom*

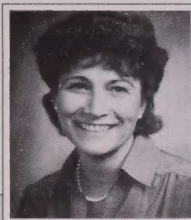
- Professional Partners or Employees?

Evening

UNIVERSITY OF MANITOBA SCHOOL OF DENTAL
HYGIENE CLASS REUNIONS.

For registration please contact: CDHA

INTERVIEW



Dr. Irene Woodall

With Dr. Irene Woodall, dental hygienist, educator, researcher, author, and lecturer.

Probe: I understand that your dental hygiene career is somewhat atypical. You're primarily involved in research, as the Director of Clinical Studies for Vipont Research Laboratories. Can you tell us a little about your work there?

Irene: What I'm doing in dental hygiene is not very typical of most dental hygienists. I conduct research for Vipont Pharmaceutical which produces Viadent toothpaste and the various sanguinarine home-care products. My job entails, the placement of clinical trials, examination of the results, and the publication of those results as the researchers need them.

Probe: Could you expand on the questions surrounding the placement of a clinical trial?

Irene: Clinical trials are necessary to establish the efficacy of the product that we're marketing and therefore one of my primary responsibilities is to insure that studies we place match the F.D.A. guidelines for approval of the products. That's been, of course, a major part of my life for the last two years. In addition to that, my responsibility is to make sure that we keep up on the literature in order to know what's going on in periodontics and with other available antimicrobial agents. I also liaise with the academics to insure good relationships with the researchers out there, either working with our products or with

other products. This provides us with the opportunity to take our ideas to people in the field and see how appropriate they are. We have an in-house clinical testing program and we test at major independent clinical testing centres and universities. We spend a great deal of time working with real patients in determining the best formulations and which agents are going to be the most helpful as adjuncts for people to get their disease under control.

Probe: You primarily began your career as an educator in dental hygiene. How did you find yourself evolving into research?

Irene: That is a good question because I'm not sure that my career path was headed toward research at all. The major turning point was when I went to head the department at the University of Pennsylvania. They, of course had a major focus on research and I loved it. As a result of that, I went ahead and got my Ph.D. It seemed to be the route by which I could learn the most about research, as opposed to entering dental school. Dental school doesn't typically teach you how to conduct research. You usually have to go beyond that, so I thought, I already have my R.D.H., my practice experience, a masters degree, and teaching experience, so the only thing left is a Ph.D. I focused very heavily on research design statistics which served me well for this particular role. I was still teaching at the University of Pennsylvania

when Vipont came along and, was interested in having me work in the marketing department, which I did for a short time. However, the bulk of the five years that I've been with Vipont has been spent working in the research department of the company.

Probe: You started out in marketing when you joined Vipont and now have migrated into research. Do you find that you still have a vested interest in marketing? Are the two areas interdependent?

Irene: Yes, they are. When looking at efficacy (how our products work), I need to know the bottom-line questions that will be asked and need to be answered. In order to do this you have to know what dentists and hygienists are interested in and how a product can improve the quality of life. Likewise, after the results of a clinical study are in, I provide the marketing department with the key findings from that study. This is one of the ways to transmit this information to the dentists and hygienists. Of course marketing works with their own group of consultants but I am the interphase or the liaison between research and marketing. This is sometimes an absolute delight and at other times I feel I don't have a home in either place. It's really important, in research, to know what the market is like and what's expected; likewise, if you're in marketing, to know what's important about quality research. Then, when you

ask the questions, you ask them in a sound way that can be substantiated by other researchers as well.

Probe: Clinical research is your major focus but not your only pursuit in the dental field. What other endeavours take up your working hours?

Irene: I spend some time writing editorials for RDH Magazine, which is currently coming out monthly. That helps me to prepare for continuing education courses, as people read my editorials and, consequently, they invite me to speak about them. As a result, approximately once a month, I do continuing education courses for dental hygienists and sometimes for dentists. That keeps me on the road quite a bit.

Also, I am continually updating the two texts books I have written and published through the Mosby Company. One is a clinical text and one is an issues text; both of which require constant revision, so I'm always writing something.

Probe: What topics do you focus on in your continuing education programs?

Irene: Most of my continuing education presentations have to do with antimicrobials and my current work with Vipont, but I try to present the sum of information concerning all agents. The focus, however, is on changes in periodontics; controversial elements that are probably going to be sorted out over the next five or six years through periodontal research and trying to prepare hygienists to face the inevitable changes that are going to come as research points the way. Another topic, very dear to my heart, is the direction for hygienists learning how to take charge of their own profession and deciding what's important about it; what they want

to keep, what they want to change, how this is going to fit in with the future, and what needs to be done to make it happen. I've dubbed this course, "Energizing Dental Hygiene", but it's a major professional-emphasis course that looks at the issues and how they can be resolved; turned into something good for us as opposed to continuously responding to problems.

That's just one of the directions in continuing education, just re-energizing our public profession that follows and keeping it in dentistry. I just did a course in Texas; the hygienists that I worked with there were ripe to have somebody come in and encourage them, prompt them to think about the future and to take responsibility for it. I watched a room of people get extremely fired up but I have no idea where it will go from here. However, if even one of the ideas that was generated, in that particular workshop, takes off and creates something better than I think I've helped. I hope so; that's what I want.

Probe: Are you seeing this evolution begin in the profession? Are you seeing hygienists starting to take charge of things?

Irene: There are certainly pockets of change; sometimes the areas that pop up surprise me. A small group of four or five hygienists will be able to rally a group of thirty or so to really carry out a project from start to finish and have a very positive effect on either the local hygienists or those in a state wide effort. Nationally, I think we still have such a diversity of needs that it is difficult to rally everybody around the same point. It's almost like "small is beautiful" in dental hygiene right now. If you can get a small group of hygienists together who are dedicated and have a

notion of the big picture, they can really do things and get a lot done. Now, if all of the small groups could just coordinate, I think we could really have a lot of activity.

Probe: Do you see differences between dental hygienists in the USA and Canada, or do we have the same issues to deal with?

Irene: I think it depends on the province. There has been a lot of energy spent in the last five years in the U.S. on this whole notion of unsupervised practice and I know that this has also been an issue in some provinces in Canada. I have also been to places in Canada where this was a "non-issue", where the dentists and hygienists didn't even seem to consider this a major area to be dealt with. They were more interested in trying to achieve patient care, than to struggle with who is going to practice where, and under what degree of supervision. It seems the places where the unsupervised practice issue comes up strongest is where hygienists feel that they're not adequately being, I hate to say the word, "compensated". More than that, it's not being held in esteem for the kinds of services they provide and the amount of effort that they put into their education. Where mutual respect exists between the dentists and hygienists these factors are not issues of contention; the struggle and unrest does not exist.

Probe: Hygienists seem to be, more and more, pursuing further educational degrees. Is this really a quest for knowledge or for self-esteem?

Irene: I believe it's very difficult right now to say that dental hygiene can remain a two year certificate or associate degree program and develop the kinds of professional esteem that we believe we deserve. So, hygienists are going back to obtain B.S. degrees

and many for their masters degrees. It, probably, will come to pass that the minimum criteria for a dental hygienist will be a bachelors degree. What really worries me, is that preceptorship may take over, which is a big issue in the U.S. right now, and that we may end up having two levels of dental hygiene. (Editor's Note: Preceptorship is essentially "on the job training" which is an issue in the southern states.) We may end up having a strict technician who is capable only of scaling and polishing teeth, while the more educated dental hygienist will not only perform these technical skills, but will understand why and how patients need to have a thorough assessment, looking for all kinds of diseases present in the mouth, and also focusing on prevention. I am speaking not only of periodontal disease and caries, but of other kinds of abnormalities that may affect the mouth, head, and neck.

Probe: What kind of advise would you give to a hygienist exploring a further degree? What's one of the exciting directions to take?

Irene: Five years ago I would have said an M.B.A.; Masters in Business Administration, maybe with a focus in organizational development or marketing. I think those are still options. I do believe that communications may be the area that has the most versatility for dental hygienists right now, who aren't certain exactly what they want to do. They can develop tremendous amounts of skill in working with people; interpersonal group communication, as well as some media-oriented communication for disseminating information. If our real focus is still prevention, then what we should be doing is learning better ways to communicate that prevention. Not only on a one to one basis or in small groups but to

the masses as well. This is an important area and one that the Christian Science Monitor talked about, it must be ten years ago now, as being a major thrust in career development and I think that still holds true. The other area, that could even tie to communications, is the area of research. I don't think that we'll be taken seriously as a profession until we define the parameters of our own research program, one that relates to what we're best at as dental hygienists and tying it to our culture as dental hygienists. We need to cultivate a whole research program in methodology surrounding that area so that we define our own body of knowledge relating to dental hygiene. Right now we still see ourselves, in terms of research, as a subsidiary of dentistry; specifically periodontics. There is nothing wrong with conducting research on topics related to dentistry and periodontics, but if we could carve out our own piece as well; I think that would go well for the profession. In the meantime, getting the research skills can be a wonderful diversion from clinical practice. You can really use your mind to design the research questions, to co-ordinate the protocols themselves and work very closely with some of the finest researchers in the country, really getting a job done that has a positive effect for the people that we see in clinical practice.

Probe: Will you now add these chapters, on research, to your books?

Irene: The research component? Actually I hadn't thought about that. That may well be a good idea. We had a whole book by Michelle Darby on the subject. It would be nice if she could regenerate that book and bring it out now. On the other hand, perhaps putting a

component into a clinical text is the appropriate thing to do, getting it right into the curriculum. It needs to be in the curriculum regardless of whether it's a chapter in a text book, or in a series of articles, or in a separate text specifically related to biostatistics in research design. We do need something that focuses the research efforts within dental hygiene when we're dealing with dental hygiene students. It would help to give them the idea and encourage more papers. They need to be encouraged to write more and to ask meaningful questions. Even to realize that they have meaningful questions that have not been answered would inspire them. We do function in terms of belief and individual experiences or by what our teachers have taught us in school, but we don't know for sure if that's the best way to approach things or the best way to solve problems. So the research questions that haven't been answered certainly are all out there.

Probe: Where do the hygienists that are reaching out and doing great things, whether they be students or experienced hygienists like yourself, get their role models? Can the educators provide the role model base?

Irene: It's really easy when you're in education to get in a rut, where you believe what you've been teaching forever is the way it ought to be and not really focusing on, probably the most important thought to instill in students: to teach them to challenge and take the ideas and ask "why". Of course that's tough for educators because you have enough on your mind without the students constantly nagging you: "Why do we have to do it this way; why can't we do it that way?" It becomes the bane of your existence especially if you

have some fiesty students. When they leave the program, you may be exhausted, but these are the people that you'll see popping up at meetings; these are the people you'll see in headlines in dental hygiene who are asking the key questions and not lying down and dying because somebody else said it had to be done a certain way. I think the educators have the responsibility to let the students know that they should get out there and be fiesty and ask questions and not just settle for what ever is handed to them. Yes, it is the responsibility of dental hygiene educators to make sure that the students know that it's OK to ask questions, and to challenge, and to give a lot of thought about why they're doing things. I think that for many years at many schools, not all mind you, dental hygiene education was a real suppressing kind of experience. You were taught that you did things a certain way regardless of the logic that either did or did not surround it. You just didn't ask questions and that kind of situation sets students up for doing what they're told rather than feeling free to challenge and to develop. Our profession needs to provide the best kind of service for the students and part of that is getting interested in research. So I think it is a mandate for the dental hygiene educators to ask, "Can we put up with students for two to four years who are going to drive us crazy asking all the questions that we think we have answers to?" It will be frustrating because for a lot of these questions we don't have the answers, but this is the role of the student. It is the role of the educator to develop thinking members of the profession; that's what we need in dental hygiene, thinking members!

Probe: What makes Irene who she is? You certainly have a personal life to conduct as well as your professional life. Where do you get your drive and your ambition; what keeps you going?

Irene: Those are probably the questions of the hour if not a lifetime. Most of the drive has come from my family. My two brothers are a lot older than me and they had already set the pace as to what was expected of me. Both are incredibly successful and consequently, I wasn't willing to settle for the "woman's role" that was the norm in the early sixties. Before anybody was saying anything about the word liberation the expectation was that I would probably get some kind of, as my dad put it, "a trade"; something to fall back on in the future! That was an important thing to do and I was guided into dental hygiene, because of the dentist that I worked for when I was a dental assistant in high school. Also my sister-in-law encouraged me, being a frustrated dental hygienist, or at least she had always wanted to be one and never really got the chance to do it. So, I found myself in dental hygiene school and soon began thinking that things could be better than the way they were. My family's influence taught me, if there's a problem then it ought to be fixed. So my goal became, "I'm going to become a dental hygiene educator and do a better job of teaching than I have witnessed or heard other people talk about." After becoming a teacher I found there were perhaps better ways of directing dental hygiene programmes, so my goal became focused on directing. I went from the community college level to University in order to do the best I could to turn the hygiene program into, what I described earlier, as one where the students are free to

think and to challenge and to make life tough for us educators. I wanted them to come out the other end self-sufficient. I take the same attitude in raising my kids. A lot of people would say that I let them get away with murder and that they challenge me or talk back to me. But I think that what's come out of it is that they're extremely independent, maybe too much so, for their own good! They do, however, challenge their teachers; God help their teachers! They challenge me as well, yet they have a very healthy respect for people who do their jobs well and who care about having something work right. That is what I wanted to instill in them. We're here to make things better and that's what I want to do and I hope that's what they do.

Probe: Where do you go from here? What's your five year plan? What are your future goals?

Irene: Well, this is a real turning point for me in putting together my five year plan. There's enough happening at Vipont that I could certainly stay in research for another five years. That's very appealing because I love the research part of my life and I like rubbing elbows with the academics as we place the research. Yes, I miss academia to a large extent. Another possibility would be to go back into academics to help keep a clinical research program going. Because I think I can do that, I know I can. I'm more interested in international marketing and international research now than I was prior to my opportunities with Vipont. I've had an opportunity to do some things lately, with Colgate, since they have acquired Vipont. This presents the possibility to learn more languages and spend more time abroad which will be very appealing after my children are in college. My eldest is

almost ready to go off and the other one is in the eighth grade. That fits into a five year plan; to become fluent in a couple of languages and study international health needs and see if I can move into that area, either in independent consulting or through a company, I don't know. But that's not really a goal right now; it's an idea that I have and I just have to decide what my real goal is. One thing I have always done though, is try to develop options for the future and that's why I've kept going back to school and why I say yes to so many projects I

probably don't have time to do. There's always another golden opportunity to learn something and if you can build on what you already know, you'll have the necessary skills when that perfect offer comes along. Saying yes instead of saying, "No, I think I'd rather just read a book tonight", will open many doors for you. But if you must read a book tonight I might recommend the Alexandria Quartet, by Lawrence Durrell, which is fantastic. I'm currently making a study out of it which may be sort of compulsive, I suppose, but I'm trying to round

things out at the same time that I'm looking at options for the five years ahead.

Probe: In lieu of this, what words of wisdom do you have for us? What's your best piece of advice?

Irene: Take it seriously. Take seriously what you do and do the best you can, but don't take it so seriously that it eats you alive.

Probe: You work diligently Irene, promoting not only your own career but the whole of dental hygiene, internationally. You're truly stepping out, making a difference, and the eyes of dental hygiene are on you. ■

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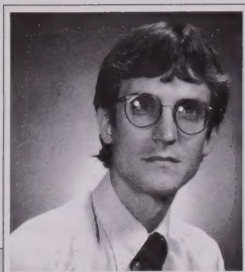
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by John J. Dmytryk
DMD*

DENTAL IMPLANT MAINTENANCE THERAPY

Introduction

Dental implants have become a successful and commonly used modality in the treatment of both totally and partially edentulous patients requiring prosthetic tooth replacement. Several long term clinical studies provide evidence of a high success rate, particularly for osseointegrated titanium dental implants.^{1,2,3,4,5}

Although dental implants have achieved an impressive success rate, it must be stated that much remains to be learned about the complex biological interaction of the dental implant with surrounding hard and soft tissues. The technology which gave rise to modern designs of dental implants was largely inspired by the use of similar materials in orthopedic surgery, which clearly established titanium, and other implant materials, as biocompatible and generally well tolerated by surrounding tissues.^{6,7} The dental implant however is unique in that part of the implant traverses through soft tissue and is in direct communication with the oral cavity. It is this transmucosal connection of

the dental implant with the complex chemistry and microbiology of the oral environment that presents unique challenges for maintaining the implant-tissue interface in a state of health. The following are a few key questions in this regard: Do plaque and calculus form on dental implants? Is the microbial flora around dental implants similar to that around natural teeth? Are the hard and soft tissues around the dental implant subject to plaque induced inflammation and breakdown, similar to that seen in periodontitis?

It is only recently that a few of these questions have begun to be answered. Plaque and calculus clearly do form on dental implant surfaces, and the microbial flora around the dental implant, may be, in many ways similar to that seen around natural teeth.^{8,9} Several studies have shown that plaque induced inflammation and breakdown of surrounding tissues can and do occur around dental implants.^{5,10,11} There is evidence that regular professional periodic recall maintenance therapy may be effective in maintaining peri-implant health and optimizing long term success.^{8,10}

Although proper periodic professional maintenance may be necessary for long term implant success, there is a surprising lack of consensus as to what constitutes proper maintenance for the dental implant and surrounding tissues. The closing statement from the 1988 NIH Consensus Conference on Dental Implants includes the following, "There are a lack of data detailing the minimum requirements

for an adequate maintenance program. The proper recall interval, methods of plaque and calculus removal, and use of antimicrobial agents are critical variables that need further evaluation."¹² The focus of this paper will be on professional maintenance of the dental implant; what instruments and procedures are available to maintain the dental implant and surrounding tissues; and how these procedures might affect implant biocompatibility.

Composition of Commonly Used Dental Implants

Of the implant systems in current usage, titanium is certainly the most commonly employed material, either as commercially pure titanium, or in the form of a titanium alloy, commonly a mixture of titanium, aluminum, and vanadium. In some titanium implant systems, a portion of the implant is coated, either with a plasma spray of titanium or with a thin coating of hydroxyapatite. Both of these coatings increase the surface area of the implant in contact with bone, and the hydroxyapatite corresponds closely to the inorganic mineral component of bone, both in crystalline structure and chemical composition. These coatings produce a rougher surface and are generally confined to that portion of the implant surrounded by bone, leaving a smoothly machined titanium surface for the transmucosal portion of the implant. Should the rough, coated portion become exposed due to tissue recession, this could create problems for maintenance.

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A variety of other metals have also been used in construction of dental implants, such as cobalt-chromium-molybdenum alloy (Vitallium). Aluminum oxide, in the form of a single-crystal sapphire is another implant material in common usage. This is a very smooth and biologically well accepted material. Other less commonly used materials are various ceramics, vitreous and pyrolytic carbon, and Bioglass.

Since dental implants in use today are constructed from a variety of materials, it becomes difficult to make general recommendations for instruments and procedures to be used for maintenance therapy, since it is likely that each implant material may respond somewhat differently to a given treatment procedure.

Instruments Available for Maintenance

In general it may be stated that all of those instruments and therapeutic procedures utilized in the maintenance of natural teeth have also been used for the maintenance of dental implants. A few instruments have been designed and marketed specifically for dental implant maintenance, and as dental implants continue to increase in popularity, it is to be expected that more instruments designed specifically for implant maintenance will become more available.

For professional in-office maintenance therapy, a wide variety of curettes of different material composition are available. These range from the standard stainless steel tipped curettes, to curettes and scalers designed more specifically for the dental implant. Titanium-alloy tipped curettes have been produced for professional maintenance of titanium implants. There has also been interest in the development of hard plastic

instruments which could debride the implant surface without scratching it.

Sonic and ultrasonic scalers are well accepted for debridement of natural tooth surfaces and have also been used for debridement of dental implants. Other automated instruments include those primarily designed for polishing such as the familiar rubber cup prophylaxis and the Prophy-jet air-powder abrasive.

There also exists an extensive armamentarium of what might best be called home care instruments, which could be used professionally in the office as well, particularly for the removal of soft deposits. Automated brushes are currently enjoying a resurgence in popularity and include both single and multi-tufted designs. A wide variety of other oral hygiene aids such as interproximal brushes, end-tuft brushes, dental flosses and tapes of a variety of compositions, can be used creatively and effectively by both patient and therapist. The challenge is how to best adapt available aids to the unique shape, surface texture, and tissue interface of the dental implant.

A variety of chemical agents, most often in the form of mouthrinses, have been used as an adjunct in plaque control. Chlorhexidine is one of the most well studied and clearly effective agents in chemically inhibiting bacterial plaque associated with the natural dentition.¹³

Possible Effects of Maintenance Procedures on Biocompatibility

Although the biology of the implant-tissue interface is incompletely understood at the present time, it does seem clear that proper recall maintenance therapy may be important in determining

long term success or failure. Since plaque and calculus do form on dental implants and can result in bacterial induced inflammation, it seems obvious that periodic maintenance therapy must include careful and complete debridement of that portion of the dental implant exposed to the oral environment. Debridement of the implant, however, must be done in such a way as to avoid jeopardizing the healthy integration of the implant with surrounding tissues.

There are several possible ways in which the implant-tissue interface could be unfavorably altered by maintenance therapy procedures. Instrumentation to debride the implant surface, either by hand or automated instruments, could directly traumatize adjacent tissues. It appears that the primary biologic seal around the dental implant is that of adherent epithelial cells. Gingival epithelial cells have been shown to adhere to dental implant materials by means of hemidermosal attachments, similar to the junctional epithelium of the natural tooth.^{14,15,16} By adhering to the implant surface, an epithelial barrier is formed which prevents ingress of bacteria and debris into deeper tissues.^{17,18} The junctional epithelium of the natural tooth can be easily traumatized and detached by such procedures as scaling and root planning, but readily undergoes healing and repair, often within a matter of days.^{19,20,21} It would be expected that similar instrumentation during maintenance would also detach the epithelium adherent to the dental implant. It is not presently known if such detached epithelium will reform an attachment to the dental implant as readily as to the natural tooth surface. It is thought by some, based on clinical experience, that the junction between epithelium and implant may be more fragile than

the association of the junctional epithelium with the natural tooth.^{22,23} If repeated instrumentation of the dental implant leads to a continuing detachment, this would indicate that instrumentation of the implant which traumatizes adjacent soft tissue should be avoided. Detachment and recession of the soft tissue margin around one of the coated types of titanium implants could expose the rougher coated portion, which is likely to be more plaque retentive and difficult to clean.¹⁸

The implant surface itself could be altered by maintenance therapy in several ways which could affect biocompatibility. The chemical composition of the implant surface could be changed either by chemical reactions with the implant or by deposition of contaminating materials onto the implant. Another way in which maintenance therapy may be likely to alter the implant is by physically altering the topography of the implant surface, such as by changes in surface roughness.

The surface chemical composition of titanium dental implants is very easily altered and also very important for biocompatibility. The surface of the titanium implant is composed of an oxide layer which appears to be critical for biocompatibility.^{24,25} Titanium is very sensitive to even minor changes in surface chemistry; indeed it has been shown that even methods of sterilization can affect the biologic response.²⁶

Use of instruments of different composition than the implant itself could possibly react chemically with the implant surface or result in deposition of instrument material onto the surface or implant. There has been some concern that the use of stainless steel curettes on

titanium implant surfaces could result in a chemical reaction between the two metals which might alter the surface chemistry of the implant. Instruments composed of softer materials, such as plastic, could possibly become deposited or adsorbed onto the implant surface. These contaminating materials could possibly affect biocompatibility.

Instrumentation of the implant surface during maintenance could also alter the physical topography of the implant surface. One of the ways in which this is most likely to occur is by alterations of surface roughness. The use of hard instruments, such as metal scalers and curettes, could conceivably gouge and roughen the implant surface. Changes in surface roughness could affect biocompatibility in at least two ways. Surface roughness could alter the interaction of surrounding tissues with the implant. Several types of tissue cells have been shown to be quite sensitive to the topography or geometry of surfaces on which they are placed; this phenomenon has been termed contact guidance.²⁷ Alterations in the surface topography of the implant by instrumentation could affect the subsequent behavior of cells which come in contact with the transmucosal portion of the implant.

Surface roughness could also affect biocompatibility by possibly altering plaque retention. It would be expected that a rougher surface would be more plaque retentive and also more difficult to debride by both patient and therapist.

The preceding paragraphs have offered what is largely speculation about how maintenance instrumentation could alter the implant surface and how these surface alterations might affect

biocompatibility. Although much remains to be learned about the complex interaction of the dental implant with surrounding tissues, recent research by a number of workers has begun to shed light on some of the issues. Some of the recent work in this area will be summarized in the following section.

Studies on the Effects of Implant Maintenance Therapy

An interesting in-vitro study, conducted at Louisiana State University, looked at a variety of different implant materials before and after a wide range of simulated maintenance procedures.²⁸ These included hand scaling, ultrasonic, rubber cup, brushing, chlorhexidine mouthrinse, among others and were done in such a way as to simulate as closely as possible 15 years of maintenance therapy. It was demonstrated by this study that different implant materials vary in their response to a given maintenance procedure. For example, sapphire implants were the most resistant to surface alterations by any of the maintenance procedures tested, while hydroxyapatite-coated titanium was the most easily abraded. In this study, those treatment modalities producing little or no detectable surface alterations were chlorhexidine mouthrinse, proxabrush, single-tufted automated brush (Rotadent), rubber cup prophylaxis with Nupro medium grit paste. The multi-tufted automated brush (Interplak) produced some minor changes of the titanium surfaces, little or no change of the hydroxyapatite-coated titanium, yet was among those modalities producing the most change of the single crystal sapphire implant.

Similarly the air-powder abrasive (Prophy-jet) produced relatively minor changes of the titanium surfaces, some removal of hydroxyapatite particles from coated titanium, and noticeable superficial alterations of the sapphire implants. The titanium scaler was fairly aggressive in producing surface alterations of all implant materials tested, tending to produce parallel grooves. Ultrasonic (Cavitron) and Sonic (Titan-S) produced fairly severe alterations of titanium and hydroxyapatite-coated titanium, but produced slight or no change of the sapphire implant. This provides evidence that a given type of maintenance procedure might be quite safe for one implant system, but potentially damaging for another.

Researchers at the University of North Carolina have looked at, in vitro, the effects of scaling commercially pure titanium surfaces with hand instruments of different composition on surface roughness and subsequent ability of tissue culture fibroblasts to attach to these instrumented surfaces.^{29,30} Titanium implant surfaces were instrumented with 30 vertical strokes of a titanium-alloy, stainless steel, or plastic instrument with non-instrumented surfaces serving as controls. It was found that both the stainless steel and the titanium-alloy curette significantly roughened the titanium implant surface, with the titanium-alloy instrument producing the greatest roughness. Use of the plastic instrument did not significantly change surface roughness relative to untreated control surfaces. Interestingly, in terms of cell attachment, only those implant surfaces scaled with the metal curettes showed significantly reduced numbers of attached fibroblasts (noted in vitro at 24 and 72 hours). The greatest impairment of cell attachment was seen on those

surfaces instrumented with the stainless steel curette. Other workers have shown a similar reduction in fibroblast attachment to roughened implant surfaces.³¹ It should be pointed out that epithelial cells are most directly in contact with the transmucosal portion of the dental implant, and recent evidence indicates that epithelial cells and fibroblasts may show a different response to surface geometry.³² Thus, the type of instrument selected to debride an implant can significantly affect both the surface texture of the implant and the behavior of cells in contact with those surfaces.

The studies described thus far are all in-vitro investigations, and caution must be used in extrapolating from any in-vitro study to recommendations for actual patient therapy. The behavior of cells on a given surface in tissue culture may bear little resemblance to the overall biocompatibility of that surface in the complex, dynamic oral environment. In order to make educated recommendations concerning implant maintenance therapy, what is needed are well-controlled clinical studies comparing different treatment approaches; unfortunately these are lacking at the present time. However, several experienced clinicians have expressed recommendations regarding approaches to maintenance therapy which seems to be effective.

In a 1986 paper, Balshi discusses maintenance procedures for patients with osseointegrated titanium implant fixtures.³³ He recommends the use of brushes with soft, polished bristles, gauze strips, end tuft brushes, and Superfloss. (Oral B, Atlanta). He cautions that interproximal brushes in which the bristles are held in place by braided wire may have the potential to scratch the dental implant, so they

must be used with care. Balshi describes the configuration and usage of a special plastic instrument designed specifically for implant debridement to be used by both patient and therapist. (Fort Washington Dental Lab, Inc., Maple Glen, PA). This instrument is made of a hard plastic that reportedly will not damage the titanium implant surface. He also recommends the use of a water irrigating device. Balshi advises a 3 month recall interval at least for the first few years after prosthetic reconstruction has been completed.

Others have also expressed a recommendation for regular professional maintenance visits, most often on a 3-4 month interval.^{17,34} The use of antimicrobial agents, particularly chlorhexidine, has been advocated for their effectiveness in inhibiting bacterial plaque formation without physically altering the implant surface. Antimicrobial mouthrinses may be particularly indicated for those patients whose mechanical efforts at plaque control are less than adequate.^{17,34} Oral irrigation devices have also been advocated for the administration of antimicrobial agents³⁴, although others have cautioned against the use of patient administered irrigation, expressing the concern that irrigation could traumatize the epithelial seal to the implant surface.²²

Conclusions

Although dental implants are currently in wide usage, little is known about how to best approach the issue of maintenance therapy. In the absence of well controlled studies, it is difficult to provide much in the way of definitive recommendations. Unless well controlled studies in the future demonstrate otherwise, it would

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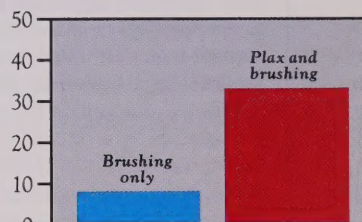
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seem prudent to heed one of the recommendations at the 1988 NIH Consensus Conference: "Scarring or pitting of the implant surface supra and subgingivally would lead to areas of plaque retention and render optimum home care more difficult. Therefore, any instrumentation that would change the surface topography appreciably should be avoided at all costs."³⁵

Long term implant success is more likely to be achieved in a plaque free environment, and this implies thorough, but careful debridement procedures by both patient and professional therapist. Patients should have a clear understanding of the importance of their role in daily oral hygiene, and receive instruction and guidance until they can demonstrate their ability to cleanse the implant fixtures effectively and atraumatically. Periodic recall maintenance visits should be spaced closely enough so that the formation of calculus on the implant surface is minimized or eliminated. This interval will likely vary from patient to patient, but perhaps should not be extended beyond 3 months. Professional maintenance therapy should be limited to the most gentle and atraumatic procedures consistent with complete removal of plaque and calculus. With good patient home care and a closely spaced recall interval this should hopefully in most cases be limited to a gentle de-plaquin, perhaps with soft bristle brushes, and flosses or dental tape, with minimal need for scaling to remove hard deposits. ■

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All manuscripts submitted for consideration for publication should be typed on standard (8½ × 11) paper, double-spaced, with a margin allowance of at least one inch. Three copies should be sent to the editor, and the manuscript must not be submitted to another publication while under review. A title page should be included stating the title of the paper and the author's full name, degree, and position.

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Illustrations must be clearly defined and suitable for reproduction on a reduced scale. Each picture should include a legend and should be marked in numerical order. Graphs and drawings should be drawn in Indian ink on white paper. Photographs must be glossy prints.

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References should be lined up numerically. References to journal articles should be made as follows: last name of author followed by initials; title of article with only the initial letter of first word capitalized; full journal name followed by volume, number, first and last pages of article to which you refer, and year.

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by Ellen Brownstone
BA, DipDH, MEd

HANDICAPPED DENTAL PATIENTS: MECHANICAL METHODS AND MODIFICATIONS FOR ORAL HYGIENE CARE

The University of Manitoba Faculty of Dentistry, Division of Continuing Education and the Manitoba Dental Alumni Association sponsored a Symposium on the "Management of the Medically Compromised and Handicapped Patient in Dental Practice" on November 3rd & 4th, 1989 in Winnipeg.

The purpose of the Symposium was to have a broad and diverse group of experts in medicine, dentistry, dental hygiene and advocacy present practical and clinically relevant material to assist dental professionals in their treatment of patients who have pre-existing medical conditions which affect the provision or delivery of dental care.

This two day Symposium included speaker presentations, panel discussions and University of Manitoba dental hygiene student table clinics. Following are the highlights of a presentation made by Ellen Brownstone, Dip.D.H., M.Ed. at the Symposium on Preventive Dentistry for the Handicapped.

Introduction

As the topic of Preventive Dental Care for the Handicapped Patient is a broad and extensive one, this presentation will include a discussion of *mechanical* methods of disease prevention in both intellectually impaired and physically disabled individuals. The preventive techniques described are for use in *self care* by patients as well as for *professional care providers*. Also provided is information on patient education methods and the value of in-service training for staff who are caring for individuals in long-term care facilities.

For the purposes of this presentation when speaking of the *developmentally disabled*, these individuals may include those with:

- Down's Syndrome
- Autism
- Seizure disorders
- Mental retardation

Generally speaking, those with developmental disabilities may be intellectually impaired.

The physically handicapped or physically disabled may include for example:

- those with arthritis and rheumatic diseases
- spinal cord injuries
- multiple sclerosis
- muscular dystrophy
- cerebral palsy
- stroke victims
- those with central nervous system impairment

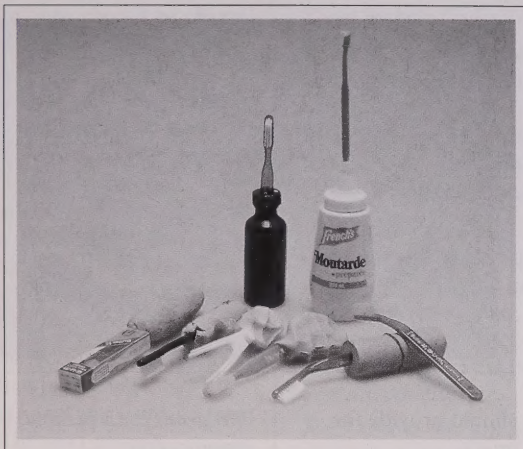
Within some disease entities, the existence of both physical and

intellectual impairment will be factors to consider in providing preventive dental care. My personal experience as a dental hygienist comes from providing education and clinical care for mild to moderately handicapped individuals at the Manitoba Developmental Centre in Portage la Prairie, where I worked on a part-time basis for two years.

Dental Care for Special Patients

Generally speaking, I believe it is fair to say that dental, dental hygiene, dental therapy and dental assisting practitioners have not always felt comfortable or prepared to provide care for handicapped patients and I can appreciate why that's been the case. It is only really in the past decade that educational curricula, continuing education offerings and conferences such as this one have addressed the needs and requirements of special patients. Dentistry and dental hygiene are now approaching students in their undergraduate programs and practitioners in the community to develop the necessary skills and the required knowledge to provide care for disabled patients in the private dental office or in institutional settings. Providing dental care for special patients offers a unique challenge for health professionals and gratifying rewards. Although *oral health* care is not always a top priority when caring for patients with special needs, it does contribute to their overall well-being and self-esteem.

Dental care providers and other health care personnel must be



flexible, innovative, patient and develop special clinical and interpersonal skills if they are to be successful in treating disabled individuals. They should also request advice and assistance when appropriate, from health professionals such as nurses, occupational and physiotherapists and others in planning and implementing care.

Dental Disease in the Handicapped and Associated Contributors to Disease

In order to plan *realistic* preventive programs for handicapped individuals, a knowledge of the cause of dental disease is necessary. Some American studies have attempted to identify the types of dental diseases prevalent among handicapped persons as compared with the so-called average population. These studies have been hampered by changing definitions of conditions over the past 20 years and have generally lacked appropriate research design controls leading to invalid results. Recent longitudinal or cross-sectional studies of people with handicapping conditions seeking care in private practice settings is almost non-existent or unpublished.

However, some of the more controlled studies in this area reveal that with respect to:

1. *Dental Caries* or dental decay, the incidence among the handicapped is approximately equal to the average population. High prevalence rates as determined by DMF (decayed, missing and filled teeth) scores result primarily from professional and personal neglect.
2. *Oral hygiene* is somewhat worse than in the average population, resulting in part from the dependence on others for care.
3. There is an increase in *Gingivitis* and *early developing*

periodontal disease compared to the average population, particularly in children.

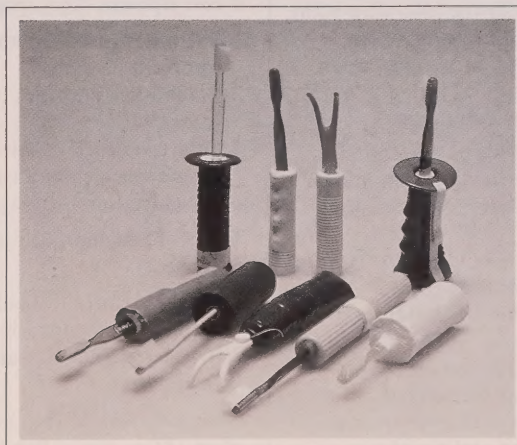
Periodontal disease is especially prevalent in persons with Down's Syndrome.

4. There is an increase in oral *malocclusion* (or teeth out of alignment) especially in persons who are severely disabled.

There are a number of variables or factors contributing to dental disease in the disabled that are worth mentioning in terms of planning *preventive dental care*.

These are:

1. Tooth anomalies including the size, shape and texture of teeth
2. Variable patterns of tooth eruption
3. Salivary flow and consistency
4. Oral microflora present
5. Diet and feeding practices
6. Oral hygiene habits
7. Use of fluoride supplements
8. Effects of medications such as anti-convulsant drugs
9. Related systemic diseases
10. Oral motor dysfunction
11. Occurrence of accidents or abuse or both
12. Degree of professional care provided, if any
13. Degree of dependence on others and for what
14. Type of disability.



Components of a Preventive Program for Persons With Disabilities

Dental hygiene practitioners have a primary role in planning and conducting preventive oral health programs for individuals and groups of people in the private and public sectors.

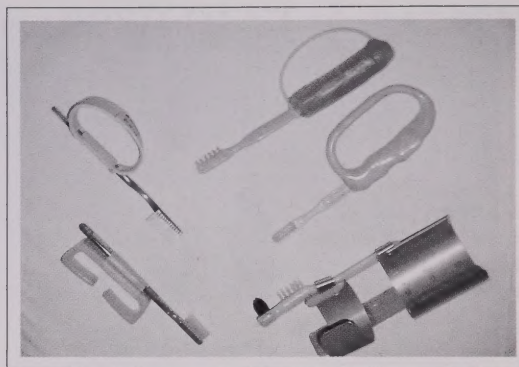
In developing such programs for disabled persons, several factors should be given consideration.

These are:

1. understanding the *psychosocial and medical issues* affecting the individual
2. alteration of *mechanical plaque removal* techniques to accommodate disabilities
3. use of *chemical agents* to promote optimum oral health
4. providing *in-service presentations* for those care-givers responsible for the oral health care of disabled individuals
5. providing appropriate *patient education* so patients can increase their ability to perform oral care techniques
6. *cooperation and working with other health professionals* to achieve oral health for disabled persons.

For practitioners who do not usually treat handicapped persons, please consider the following point, on the development of a private practice dental office prevention program for those with a handicapping condition.

1. An office-based prevention program should be *feasible* for both the busy office and the patient.
2. program should be *cost-efficient* in terms of time spent by the patient and the dental team staff members.
3. the program should *educate* to either alter the behavior of the patient or care-giver to ensure continuing oral health.



4. program should provide for *frequent recall*.
5. program should provide for *frequent therapeutic intervention* such as periodontal scaling, pit and fissure sealants and fluoride therapy to maintain health.
6. preventive program should be integrated into treatment planning and restorative dental care.
7. preventive program must be *individualized*. It's more than likely that patient education and oral physiotherapy aids will have to be modified for the handicapped patient.

All of the points mentioned represent a *problem-oriented* approach to individualizing preventive dental care and making it cost efficient. This approach:

1. identifies specific patient problems
2. establishes priorities for patient care and
3. addresses each problem with an appropriate preventive measure or educational strategy.

The problem approach helps to ensure that:

1. major areas of difficulty receive appropriate emphasis and
2. that unnecessary treatment is minimized.

Now, let's look at the clinical steps of an *Office-Based Prevention*

Program for a person(s) with a handicap(s)

A. Patient assessment of Oral Hygiene Status

- Includes *subjective* and *objective* clinical measures
- The *Clinical Assessment* measures for determining oral hygiene status which should be conducted are:

1. *Plaque Index* for quantifying the presence of plaque. Disclosing solutions can be used for plaque assessment on most individuals who have handicapping conditions except:
 - a) persons considered hyperactive and following a dietary regimen that eliminates food additives or dyes
 - b) persons with oral motor dysfunction causing excessive drooling
 - c) patients with severe management problems
2. *Written description of gingival and periodontal status* including:
 - a) location and extent of inflammation
 - b) bleeding on probing. If dental indexes are used, Ramfjord's Periodontal Disease Index or the Gingival Index are probably the most appropriate. However the G.I. measures gingivitis only, not periodontitis.

- c) pocket depths should be charted when indicated and behavior permits.
- d) documentation of microbial activity using phase contrast microscopy would be beneficial
- e) and in cases of gingival overgrowth from anti-convulsant drug therapy, quantitative descriptions of the *degree* of gingival enlargement should be recorded.

The clinical measures described are daily routine procedures that dental personnel carry out on most patients. The next patient assessment measures discussed are those additional measures which should be performed for the disabled patient when appropriate.

1. *Assessment of Oral motor dysfunction*

If the dentist or dental hygienist observes food debris or plaque accumulations on or around the teeth or lodged in the palate or buccal vestibule they should then assess for oral motor function. This assessment can be performed during the oral examination or during the toothbrush assessment.

Three observations will generally indicate dysfunction and this will affect the proposed preventive treatment plan. They are:

- 1. inadequate wiping motion of the tongue along the buccal surfaces of the teeth
- 2. inadequate lip closure with drooling
- 3. moderate to severe speech articulation problems.

Additionally, gag reflexes and sensitivity to taste or touch should be noted, which would interfere with toothbrushing or fluoride applications.

Once objective clinical measures are recorded, the more *subjective clinical and behavioral assessments* must be determined.

These include finding out:

- 1. the chronicity of the patients' status and reasons for the problem
- 2. whether dental disease states are caused by professional or personal neglect and how long they've existed.

The answers to these questions will greatly influence the preventive dental treatment plan, the selection of preventive measures, and the likelihood of success in treating existing conditions.

Also, before any attempt is made to alter the disabled person's oral care habits or lack of, the dental hygienist should observe the patient's current techniques.

The types of questions which need to be answered for this purpose are:

- 1. *Can the patient place the brush in all areas of the mouth?* If not: Can a regular toothbrush be grasped? Can the patient cross the midline of the body to reach the opposite side of the mouth or must the head be turned?
- 2. *Can the patient turn the brush to reach all areas?* If not: Do other motor problems interfere with brush placement? Does the patient need to switch hands to brush all areas?
- 3. *Can the patient place the bristles near the cervical area of*

the tooth? If not: Is the tongue or tense cheek or lip muscles interfering? Can the patient comprehend what areas you want brushed? Are the gingival areas sensitive?

- 4. *Can the patient floss their own teeth?* If not: Does the patient have the coordination to use their fingers? Does the patient have the necessary visual and perceptual motor skills? Can the patient control the pressure of floss insertion to avoid tissue damage? Can the patient manipulate a floss holder? Does the patient understand the concept of "spaces" between the teeth?

Once the oral health status of disabled patients has been determined, using some or all of the clinical and affective measures we just talked about, *then an appropriate individualized efficient and cost-effective preventive care plan can be developed for the patient which includes a regular recall component.*

The *treatment plan* must consider and integrate the

- 1. needs of the patient
- 2. capabilities of the patient both intellectually and physically
- 3. other influencing factors in the patients life such as where they live (home or health care facility), who they live with,



who looks after them if anyone (such as health care staff person, or family member) and patients willingness to be involved in their own oral hygiene care.

When preventive treatment is provided in the dental office, some *useful tips* to consider are:

1. make *short appointments* for oral health assessment in conjunction with operative appointments
2. *information* provided to the patient *must be given clearly* and reinforced by each team member
3. *team members should communicate* often and cooperate to ensure the best use of time and resources
4. *assistance should be provided for the hygienist or dentist* for help in suctioning, charting or for behavioral management. Frustration caused by not being able to adequately perform procedures is not beneficial for the patient or operator.

Mechanical Methods for Oral Health Care and Modifications

Mechanical plaque removal is still the best known method of preventing dental diseases. In recent years, chemical plaque control, ranging from the use of fluorides to chemical antiplaque products to antibiotic therapy, has become very successful. However, mechanical plaque removal methods are still primary in preventing diseases and when combined with other chemical measures when desirable, are very effective in disease prevention and treatment.

In order for the dental professional to teach effective daily *toothbrushing* and *mouth care* they must be familiar with:

- A. specialized patient positioning
- B. adaptive aids

A. Patient Positioning and Location

Patient positioning will depend on where the patient lives and their general health status. *The position chosen must:*

1. be comfortable
2. be practical for your patient or their care provider
3. provide support for the head and body
4. allow adequate visibility
5. have a good light source

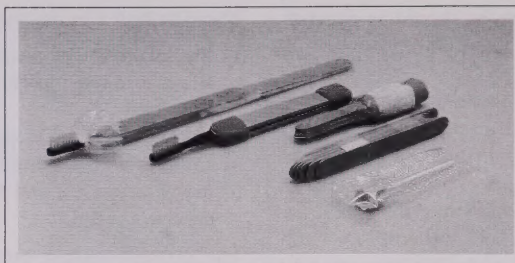
Home Setting

In a *home setting* you can work in a variety of locations, for example, the kitchen, living room, bathroom or bedroom.

You can offer the disabled or physically handicapped person the option of listening to music or watching a favorite TV show while providing oral hygiene care. The individual does not necessarily have to be located in front of a sink. *They can sit on the floor, in a chair, or be reclined on a couch or bed.* You can adjust your position to suit your patient.

In a *Home Setting* to provide care such as toothbrushing and flossing, options for operator positioning are:

1. If the individual is sitting on the floor, sit behind them on a chair.



2. If the patient is sitting in a chair, stand behind the chair.
3. If the person is lying on a couch or bed, sit on the edge, place a pillow on your lap and rest the person's head on the pillow or on your arm.

Home/Health Care Facility

In the home or in a health care facility:

if the individual is in a *wheel-chair daily*, the chair may be positioned at the sink for easy rinsing or have a basin, cup and towel available and perform oral care in the person's room.

The wheel-chair may be an ideal location for the severely disabled because it provides accessibility for head cradling, hand holding and visibility of the oral cavity.

B. Adaptive Aids

Many people with disabilities have caregivers who are quite willing to provide oral hygiene care.

However for some, toothbrushing and flossing are the last items on a very long list of demanding daily requirements. Patients greatly benefit when they can master home care technique for themselves.

Modifications to oral hygiene aids may be related to grasp, to limited shoulder or elbow movements and to manipulation. For many patients a simple adaption of the toothbrush or floss holder will allow them some independence and control over these procedures. Adaptions may include:

- enlarged handles
- hand attachments
- elongated handles

When constructing adaptive aids, the following factors should be considered:

1. should be *easily changeable* when no longer effective and inexpensive
2. aid must be *cleanable*
3. aid must be *durable*, that is, it can withstand exposure to water and saliva
4. aid should be *resistant to the absorption of oral fluids*.
Adaptive aids can be developed by *altering* common home care aids or by *ordering* them through a professional self-care aids catalogue.

B1. Universal Cuff

The universal cuff will help those with *partial or no hand closure* to hold a toothbrush or flossing aid.

Individuals with physical disabilities often own universal cuffs already because they use them to hold silverware and other items.

The holder is made by sewing a pocket on a strip of coarse fabric and attaching a velcro closing. The toothbrush is inserted in the pocket and bent to a comfortable angle for the patient.

A universal cuff may also be made by attaching a toothbrush to the handle of a fingernail brush using adhesive water resistant tape.

B2. Extension Rods

Extension rods are used for those with limited hand extension.

There are a number of ways to make extension rods.

Three home made ways of doing so are to:

1. Using a simple wooden cooking spoon and waterproof tape, attach a toothbrush to the

narrow handle of the spoon and use the spoon as an enlarged handle for the patient.

2. Or, insert a toothbrush into the top of a long handlebar pad
3. Or, break the handle of an extra toothbrush and tape it to the end of another toothbrush.

B3. Enlarged Handles for Toothbrushing

Enlarged handles are designed for people with limited closure of their hand which prevents grasping for the purposes of toothbrushing and flossing.

1. For people who are unable to flex their fingers and completely grasp a toothbrush handle, like arthritics or cerebral palsy and muscular dystrophy patients, an *oversized handled toothbrush* is best.

Such a toothbrush can be constructed of almost any material that is flexible enough to wrap around the handle of a toothbrush using *waterproof tape*.

Examples of *home items* that can be used to accomplish this are:

- tennis ball or tennis can
- sponge or washcloth
- orange juice can
- bicycle handle
- rubber ball
- pens or pencils

Examples of *dental office items* include:

- 2 × 2 gauze sponges
- mirror handles
- saliva ejectors
- other toothbrushes
- tongue blades

*The material and the amounts used should depend on the type of handicap the patient has and the material used. A *less porous* material is best and if a porous material is used it must be changed periodically.

B4. Other Aids

Other Modified Toothbrushing Aids Include:

1. *Double-headed toothbrush* — for patients with tremors. This brush allows the patient to lock into the tooth surfaces.
2. *Aspiration Brush* — for patients who are confined to bed or who are unable to rinse or expectorate fluids. This apparatus which hooks into a suction device permits evacuation of oral fluids during brushing.
3. *Heat treated brushes* - for people who have trouble maintaining a raised arm position for brushing. Any toothbrush can be bent over heat or under hot water in any manner usable by a patient so that plaque removal is effective with minimal handle grasp and discomfort.
4. *Electric toothbrush* — for patients with no arm movement, but not for severely handicapped as uncontrolled electric toothbrushing may cause soft tissue trauma.

Advantages of the Electric Toothbrush Include:

- extra weight of handle
- thickness of handle helpful for those with a grasping problem
- can be modified to add length to it
- can be fixed to a wall or table for cause in handling.

Disadvantages of the Electric Toothbrush for the Disabled Include:

- extra weight of handle for those with limited arm strength

- the on/off switch may require more strength and finger coordination to operate than certain patients can manage
- the vibration created during use cannot be tolerated by certain patients
- cross-contamination of tips is a problem in institutions.

When choosing an *electric toothbrush* for the disabled person, look for the following features:

- *cordless and rechargeable handle*
- *an off/on switch* which starts automatically with pressure
- *a circular up and down motion of the bristles*
- *soft, nylon bristles*

B5. Floss Holders

Disabled persons will need to be fairly motivated to use *dental floss* daily. There are several *floss holders* available which may be used by those with use of one hand or with limited dexterity. However they all require some skill and may need to be stabilized in a stand for threading. Floss holders can be wrapped in foam padding or inserted in a rubber ball or bicycle handle for better grasp.

If patients have difficulty using a floss holder, then alternate ways of cleaning interproximal areas must be examined, for example the use of an end tuft toothbrush, proxabrush or interdental stimulation may be useful.

B6. Toothpaste Aids

To help get toothpaste out of a tube for those disabled with limited hand and grasping ability you can enlarge the cap on the toothpaste tube by applying to the cap a quick setting denture plastic such as Formatray to serve as a handle to turn the cap. This enlarged cap can be saved and used for new tubes of toothpaste.

B7. Aids for Cleaning Removable Appliances

Aids for cleaning removable appliances such as dentures are designed for those individuals with the use of only one hand.

Denture brushes can be modified so that they are fixed to a counter or sink and then the disabled person can use one hand to rub the dentures across the brush to clean them.

One method which works well is to attach *suction cups* to a denture brush or handbrush with screws.

Patient Education for the Disabled Patient

Instructing and motivating the patient with a disability in oral prevention techniques offers a unique challenge for the dental professional.

All approaches to providing oral hygiene instruction for intellectually impaired or physically disabled persons should be based on:

1. an individual's functional abilities, both physically and intellectually
2. involvement by care-givers
3. patient's motivational level

Guidelines and suggestions for patient education in treating the disabled aren't that greatly different from other patients and include:

1. *Involving the patient and/or caregiver* as appropriate using the "tell, show, and do" approach. *Tell* the patient how they will use adaptive aids and what they can accomplish, *show* them how to use the aids on yourself or a model and then demonstrate their use on the patient by assisting the patient in using these aids.

Involving the patient allows the patient to participate to the extent of his or her abilities and

to rehearse the skills being taught. Involving the caregiver provides them with an understanding of his or her role.

2. Whenever possible, *provide a means for checking for plaque control.*
3. *Use terminology the patient and caregiver can understand.*
4. *Go slowly* when instructing especially with intellectually impaired individuals. Teach one concept or method at a time. Ask the patient and/or caregiver to demonstrate what they've learned before proceeding to the next step.
5. *Give verbal praise and encouragement.* Offer positive reinforcement.
6. *Always end the preventive session on a positive note.* If the patient becomes tired, restless or inattentive, review the last successfully completed steps before dismissing the patient.
7. During follow-up appointments, review activities from the previous appointment. *Reinforce* what the patient remembers and demonstrate and repeat what the patient omits.
8. Always *encourage* the patient and/or caregiver to practise what they've learned, especially when using adaptive aid, so that they become less dependent on the dental professional for routine care.

In-Service Training of Non-Dental Care Providers

The oral health care of patients who are being cared for by others in the home, a hospital, nursing home, or other institution is often neglected because of the magnitude of other health problems, the inability to perform self-care, or the lack of time, knowledge or motivation on the part of caregivers responsible for providing daily care.

The dental hygienist can assist in the delivery of improved oral health care to patients who are bedridden and/or institutionalized by providing dental hygiene care for them and by teaching family members or institutional staff how to provide effective, daily oral hygiene.

In-service training for non-dental care providers should be *practical* and deal with topics that directly apply to the patients with whom you are concerned. Often, a *one-on-one* session with a *hands-on demonstration* will be the most effective way to instruct and motivate participants.

1. *Setting up an In-Service in a Facility*

It's best if prior to developing an in-service program you *visit the facility* to get familiar with the basic routines of the caregivers and patients or residents. Dental hygienists should work to *develop a rapport with the staff* and demonstrate a desire to help them with their unique problems. In-service should be *tailor-made*. If a preventive program already exists in a facility, it's important to find out *how it is conducted* and who is responsible for it.

2. *Components and Guidelines for an Oral Health Care In-Service*

- 2.1. Do not try to cover too much material in one presentation
- 2.2. May repeat presentation for different shifts of staff
- 2.3. Be brief and concise

- 2.4. Allow time for questions and discussion
- 2.5. May supplement your presentation with handouts
- 2.6. In-service content could include:
 - slide presentation on the difference between a healthy and diseased mouth
 - toothbrush and flossing techniques
 - use of adaptive aids
 - care of toothbrushes
 - denture care
 - dietary considerations
 - how to manage the uncooperative person.

Examples of In-Service Presentations Include:

Lecture and slide presentation
Hands-on demonstration
Policy and Procedure Guide for Oral Care

Non-dental care providers can significantly contribute to the oral health of disabled persons if they're motivated and are instructed on the "how tos" of preventive dental care.

Conclusion

Dental professionals must be patient, creative and flexible when working with individuals with disabilities. They must search out the ways by which mechanical methods of plaque removal can be altered or modified to work effectively for the handicapped person. Motivating and instruction of both the disabled person and their caregivers will ensure optimum oral health. ■

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A CLINICAL PERSPECTIVE



by Leanne D. Carlson-Mann
SDT, RDH

SO YOUR NEW PATIENT HAS DENTAL IMPLANTS!

Patients with dental implants are now appearing in the offices of dental professionals who had not been directly involved in the initial placement or restoration of the implants. It is important for the hygienist involved in providing maintenance therapy to fully understand implants and their necessary care. Without this knowledge, irreversible damage to the implant may result.

After the explosion of information from the Branemark research, oral surgeons became the specialists involved in placing root-form implants, when the focus was originally on edentulous patients. But, in March 1985, the Executive Council of the American Academy of Periodontology provisionally changed the defined scope of periodontics to include the discipline of oral implantology. Implantology is present, in some form, in all post-graduate Periodontal and Oral Surgery Training programs.

The current trend in dental implants is toward the partially edentulous patient, where the expertise of the periodontist, oral surgeon and general dentist come into play, as considerations regarding treatment plans become more complicated. Decisions

concerning when and where to extract, and how many implants to place, become very important.

The hygienist's role is crucial since the maintenance of dental implants requires record-keeping, scaling, and good oral hygiene. However, many hygienists feel uncertain on how to treat implant patients. Through continuing education seminars and formal education in the curriculum of dental hygiene programs, this knowledge can be attained.

There are three main types of implants currently in use in dental practices. The "Subperiosteal" type rests on the surface of the bone beneath the periosteum. This type should be placed on the basal bone of the mandible of mature patients, aged fifty to seventy years, and preferably opposing a complete maxillary denture. The "Transosteal" mandibular bone-plate type penetrates the inferior border of the mandible and projects through the oral mucosa covering the edentulous ridge. These are indicated for use in adults with edentulous mandibles with nine millimeters or greater vertical bone height. The "Osseointegrated" implants are embedded in maxillary or mandibular bone and project through the oral mucosa covering the edentulous ridge. These are indicated for patients with seven millimeters or greater vertical bone height and seven millimeters or greater bone width.¹

For the purpose of this article, the osseointegrated implant will be discussed. According to

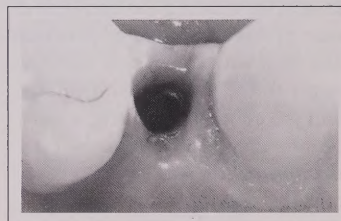


Figure 1

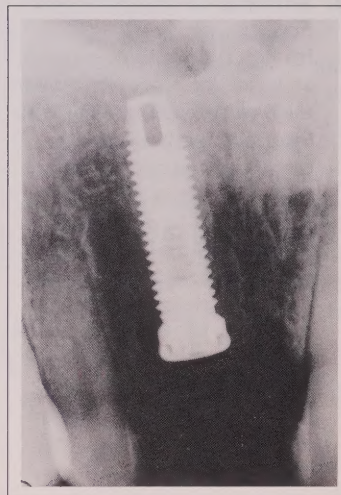


Figure 2



Figure 3

Branemark, osseointegration is a "direct connection between living bone and a load-carrying endosseous implant at the light microscopic level." This differs

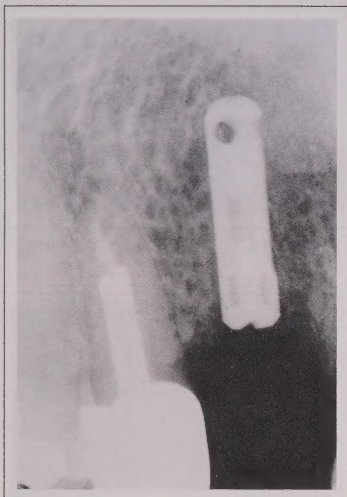


Figure 4

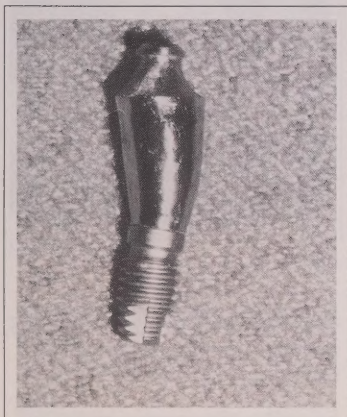


Figure 5

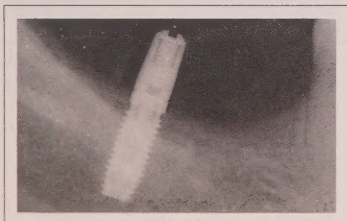


Figure 6

from the support of a natural tooth where a fibrous periodontal ligament exists between the tooth and the bone. The gingival sulcus around the implant abutment exists as around natural teeth

(Figure 1) and the bacterial flora is similar to the gingival sulcus around natural teeth.²

Recommended procedures to follow when seeing a patient with osseointegrated implants:

1. Request radiographs, the home care instructions and the type of implants placed by the dentist (Figure 2,3,4). Implants of the endosseous type are usually made of titanium but some may have a hydroxyapatite coating. Implants such as IMPZ and Integral have a smooth bullet shape while others have a screw design, like Nobelpharma and Screw Vent. Hollow basket designs such as the Core-Vent Implant are also used.

Some implants have cemented inserts (Figure 5, note flush fit cement margins) which project into the oral environment. Others have a threaded abutment which is fully retrievable (Figure 6).

2. Tap the implant with the handle of a dental mirror. You should hear a definite ring (ankylosed sound) which indicates the implant is integrated. If a dull "thud" occurs with or without discomfort from the patient, this usually indicates osseodisintegration.

3. Check that there is absolutely *no* mobility. Mobility is the ultimate sign of implant failure. Check the bridgework for mobility; any mobility here indicates a loose abutment screw or implant failure. Unfortunately, failing implants do not become mobile until a critical amount of bone has been lost. At this point, there is no treatment process to reverse this phenomena.

4. Probe the sulcus around the implant to detect bleeding, tissue tone, and inflammation (Figure 7). Probing measurements should be recorded to follow progress and to detect possible problems. Some



Figure 7

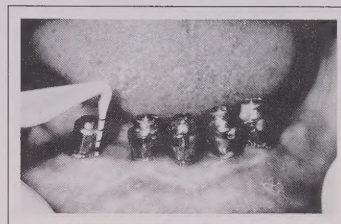


Figure 8



Figure 9

implantologists feel probing should not be done. Newman et. al indicate it is important to monitor implant health. Probing depths of implants are not necessarily as important as with natural teeth. Often times, abutment designs prevent accurate probing measurement because the probe is not able to reach the apex of the pocket. Deepened pockets are always found in failing implants, however that alone does not conclude an implant failure. Probing depths in stable implants ranges between 1.3 and 3.8 millimeters (Figure 8).

5. Record any gingival abnormalities, for example: hypertrophy (Figure 10) or progressive attachment loss (Figure 9). Either of these could indicate possible osseodisintegration.²

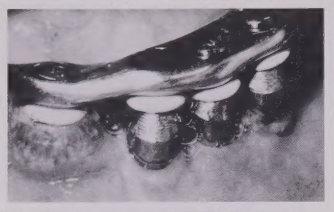


Figure 10



Figure 11

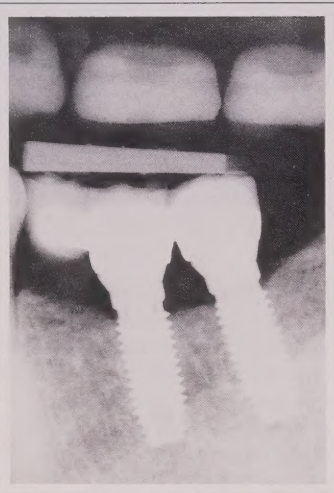


Figure 12



Figure 13

However, Newman et. al. report that the role of attached mucosa at the peri-implant cuff appears to be of minor importance for the peri-

implant health as long as good oral hygiene is practised and achievable.^{3,4,5}

6. Radiographs provide an accurate way to evaluate the status of implant health. Therefore, radiographs should be an important aspect of the recall appointment. Take x-rays of the implants using paralleling technique (Figure 11) along with vertical bite wings (Figure 12) and compare implant bone height from the initial reference radiograph. Intraoral standardized radiographs are desirable, but in some cases, difficult to obtain due to the anatomical topography of the site.² "Extraoral orthopantomography or computerized tomography can provide valuable information of peri-implant bone and the surrounding structures and aid in visualizing the three dimensional shape of the jaw, especially prior to implant insertion".²

Strid and Hollender report that 0.45 millimeters of coronal bone may be lost in the first year following placement and 0.06 millimeters per year after initial bone loss.² If the rate of bone loss is greater, it may be due to:

- a) occlusal interferences
- b) fracture of the abutment or implant (Figure 13)
- c) peri-implantitis (similar to periodontitis) (Figure 14)
- d) a peri-implant radiolucency which indicates a failed implant (Figure 15).⁶

7. Occlusion may be the primary cause for implant failure by bone fracture. Occlusion should be checked and verified by the dentist. Implant failure, after osseointegration, may be the result of either occlusal overload, or bacterial infection. The restorative dentist is responsible for reducing the occlusal stress as in adjusting the bridge design. The hygienist



Figure 14

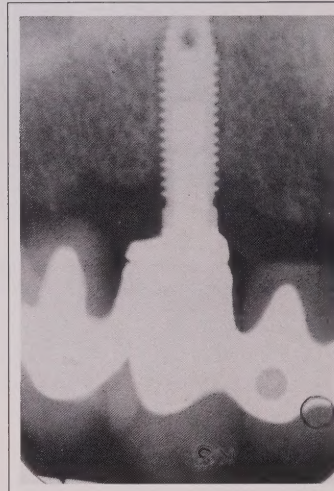


Figure 15

can aid in the treatment of failing implants by performing specific bacterial tests.⁶

Partially, as well as fully edentulous patients should be seen on a regular three month recall for the first 18 months after the fully restored implant, in accordance with the Branemark System (TM) Clinical Guidelines. Ideally, the recall intervals after that period should keep the three month frequency. However, the recall should be left to the individual clinician and the patient, depending on the progress and could possibly extend up to four or six months.

Studies indicate the composition of subgingival plaque associated with dental implants is comparable to the natural dentition:

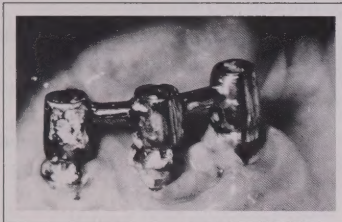


Figure 16



Figure 17

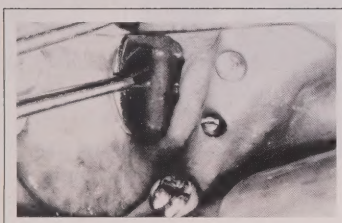


Figure 18

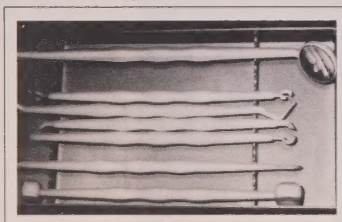


Figure 19

- a) Stable implants: Gram-positive organisms dominate with a few mobile bacteria and Spirochetes.
- b) Failing implants: Gram-negative rods, Black-pigmented bacteroides, surface translocating bacteria, Actinobacillus, actinomyetemcomitans, Capnocytophaga, Fusiforms, and Spirochetes.²

Newman et. al. note that for partially edentulous patients the bacteria associated with peri-implant pockets could possibly enter the sulcular area of natural teeth. The reverse also applies; bacteria from the periodontal pockets of natural teeth could transfer to implants. Thorough periodontal treatment should be completed before implantation. Some treatment regimens also include chlorhexidine rinsing or irrigation or other antimicrobial treatment.²

The most important duties the hygienist will provide for the implant patient include scaling, polishing and home care instructions, along with implementation of an individualized recall regime.

Plaque will form around the implant abutment and, if allowed to grow freely, it will resemble the bacterial flora associated with gingivitis and/or periodontal disease. It is reported that the bacteria does not adhere as easily to the titanium post as to the surface of natural teeth and the plaque takes a longer time to form. If plaque and/or calculus formation occur, gingivitis or conditions similar to periodontitis (peri-implantitis) may negatively affect the successful long-term survival of the implant⁷ (Figures 16,17,18).

Scaling

The principles involved in scaling implants differ from scaling natural teeth. The Branemark Guidelines (TM) suggest to avoid applying excess pressure when scaling, as the superficial layers of calculus are normally are not too difficult to remove from the implant abutments. "If no subgingival calculus is present, avoid inserting the scaler deep into

the gingival pocket around the abutment."⁷

Metal instruments are *not* recommended when scaling implants and inserts. The surface of the titanium implant can be easily scratched by metal scalers. This may lead to greater plaque and calculus formation.⁷ A number of microorganisms may also accumulate on the rough areas created by the instrument, which may lead to inflammation.² The use of ultrasonic devices for this purpose is also *not* recommended.^{2,7}

It is suggested that if metal instruments are to be used, they should be made of titanium. Since titanium is not as hard as stainless steel, it will be less likely to cause scratching on the implants or inserts.

The scaling instruments of choice are made of plastic, such as those designed for the Branemark System (TM) (Figure 19). If plastic scalers are not available, a Teflon or wooden instrument may be used. Half of a round, pointed toothpick in the hole at the end of the proxabrush handle may also prove to be an effective scaler. Caution is advised here; breaking and splintering may occur and magnify the problem.

Polishing

Polishing with Flour of Pumice, or using a cavitron or air polisher are too abrasive for titanium implants and are not recommended. A mild abrasive paste, used on a prophylactic cup or rubber point, work quite effectively to remove plaque and discolorization.⁷ This method can be used on both the bridgework and abutments at recall visits.

Buffing inserts "shoe-shine style" with strips of 2x2 gauze or Superfloss (TM) are also effective.

Patient Instruction

Information and instructions to patients should be individualized, according to the position of the abutments, the abutment length, the bridge or denture design, the surrounding anatomy and the patient's general oral health.

Encourage patients to establish a daily routine. It is important to remember that most patients have lost their natural teeth through neglect; changing their oral hygiene habits may be a difficult task.

Patient education should include strict instruction never to use a hard toothbrush, safety-pins, paper clips or other metal objects to self-clean the implants or inserts.

A number of items may be required to achieve good oral hygiene:

1. Soft toothbrush (regular or a two-row sulcular): These brushes work well on the facial portion of the abutments and the gingival aspect of the bridge (Figure 20).

2. Interdental brushes (Proxabrush (TM) traveler with nylon-coated wire) (Figure 21): the new nylon-coated wires may protect the abutments from scratches more than the original metal-coated wires. By angling the Proxabrush (TM), most of the interproximal lingual surfaces of the abutments can be cleaned.
3. End-tuft (tapered or flat) (Figure 22): These brushes can de-plaque lingual surfaces of the abutments, which have limited



Figure 20



Figure 23

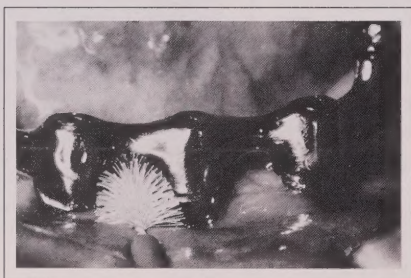


Figure 21

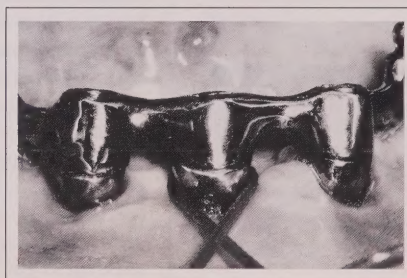


Figure 24

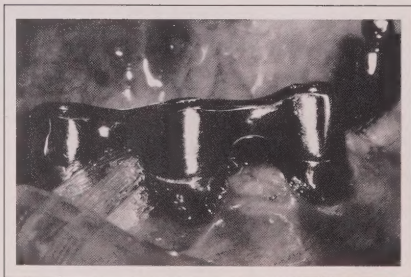


Figure 22



Figure 25

accessibility with the bridge or denture attached. The handle may be custom bent for easier use by each patient.

4. Dental floss (regular waxed or unwaxed, Superfloss (TM), dental tape, gauze or Butler's reusable plastic floss modified and specifically designed for implants) (Figures 23,24). The patient should be instructed to use more of a "shoe-shine" motion when flossing.
5. Disclosing tablets: Many implant patients have lost their natural teeth through their own neglect; daily cleaning of dental implants may be difficult for them. Disclosing solutions may aid patients in evaluating their home-care techniques.
6. Dental mirror: Implants are not easy to keep clean but, with the aid of a dental mirror patients can see the actual shape of the implant abutment.
7. Antimicrobial solutions (Chlorhexidene): Some implantologists feel the Chlorhexidene solutions cause straining on the implant bridges and should not be used. Other implantologists feel the response from the antimicrobial agents is so beneficial that the staining is secondary. If chlorhexidene is to be used, rinsing is not necessarily the method of choice. Dipping a toothbrush in a chlorhexidene solution may be equally as beneficial and is less likely to cause the same amount of staining.
8. Rotary toothbrushes (Rota-dent, TM) (Figure 25). The Rota-dent (TM) toothbrush is available only through dental offices and not in retail outlets. Providing this brush to patients is an added responsibility for the dental offices involved, however, the Rotadent (TM)

brush is an effective and easy way to clean implants. The motion of this brush is similar to the hygienist's polisher and different brush attachments are used for each surface. The rotary brush dipped in an antimicrobial solution may also be beneficial.

It is important to remember that each patient is an individual and therefore, not every item listed above will be necessary for each patient. It is the hygienist's responsibility to choose the appropriate aids to suite the patient's needs.

Dental implants have become part of the mainstream of dentistry. As a result, the increase in public interest with this phenomena has lead to an abundance of research and rapid change for dentistry. It is the responsibility of the dental hygienist to keep abreast of current findings and give their patients correct and effective treatment. ■

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SELF ASSESSMENT TEST HISTOLOGY

- 1 Cells are surrounded by a _____ that encloses all components of the cell.
 - a. cytoplasm
 - b. nucleus
 - c. organelle
 - d. membrane
 - e. genetic code
- 2 Epithelium is classified according to the number of cell layers present and the shape of the most superficial cells. The oral epithelium is composed of
 - a. simple squamous epithelium
 - b. simple cuboidal epithelium
 - c. stratified squamous epithelium
 - d. stratified columnar epithelium
 - e. pseudostratified columnar epithelium
- 3 The histological structure of the gingiva is composed of
 1. fibrous connective tissue
 2. simple squamous epithelial tissue
 3. areolar connective tissue
 4. stratified squamous epithelial tissue
 - a. 1&2
 - b. 2&3
 - c. 1&4
 - d. 3&4
 - e. 1&3
- 4 Epithelial tissue is separated from the underlying connective tissue by a structure known as the
 - a. synovial membrane
 - b. basement membrane
 - c. Nasmyth's membrane
 - d. buccopharyngeal membrane
 - e. hyaloid membrane
- 5 A tooth germ is comprised of
 - a. enamel origin
 - b. dental papilla
 - c. dental sac
 - d. all of the above
 - e. A & C only
- 6 The enamel organ consists of four distinct cell layers. The layer which becomes the future enamel producing cells is the
 - a. outer enamel epithelium
 - b. inner enamel epithelium
 - c. stratum intermedium
 - d. stellate reticulum
- 7 The mesenchymal tissue surrounding a developing tooth germ is known as the dental sac. The dental sac produces the
 - a. pulp
 - b. periodontal ligament
 - c. enamel cuticle
 - d. dentin
 - e. dental lamina
- 8 During development of the tooth germ at the stage which immediately precedes the beginning of hard tissue formation, the line of union between ameloblasts and odontoblasts is the future
 - a. cementoenamel junction
 - b. epithelial attachment
 - c. dentinoenamel junction
 - d. inner wall of the pulp chamber
 - e. contour of the tooth root
- 9 Masticatory mucosa is keratinized and is found in the following location.
 - a. dorsum of the tongue
 - b. lips and cheeks
 - c. gingiva and hard palate
 - d. alveolar mucosa
 - e. gingiva and alveolar mucosa
- 10 The ends of fibers of the periodontal ligament which have become embedded in the cementum during its formation are known as
 - a. Korff's fibers
 - b. Sharpey's fibers
 - c. Tomes' fibers
 - d. elastic fibers
 - e. Purkinje fibers
- 11 The most predominant cell of the periodontal ligament is the
 - a. fibroblast
 - b. osteoblast
 - c. cementoblast
 - d. ameloblast
 - e. odontoblast
- 12 The most abundant type of papillae found covering the top surface of the tongue is the
 - a. fungiform papillae
 - b. filiform papillae
 - c. foliate papillae
 - d. vallate papillae
- 13 Osteoclasts are found during the process of bone
 - a. apposition
 - b. autolysis
 - c. resorption
 - d. initiation
 - e. mutation
- 14 Which of the following fiber groups of the periodontal ligament do not attach into the bone of the alveolar process?
 - a. oblique fibers
 - b. apical fibers
 - c. horizontal fibers
 - d. transseptal fibers
 - e. interradicular fibers
- 15 The epithelial cells found in the periodontal ligament are remnants of Hertwig's epithelial root sheath. These cells are known as
 - a. odontoblasts
 - b. rests of Malassez
 - c. cementocytes
 - d. fibroblasts
 - e. osteoblasts

Submitted by:

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Answers to Self Assessment Test

- | | | |
|------|-------|-------|
| 1. D | 6. B | 11. A |
| 2. C | 7. B | 12. B |
| 3. C | 8. C | 13. C |
| 4. B | 9. C | 14. D |
| 5. D | 10. B | 15. B |

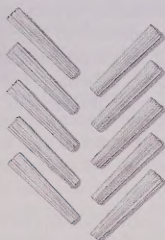
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PARTS BY DENTISTS.



"A rounded brush head with an improved bristle layout would minimize the risk of gum damage and increase patient comfort."



".008mm polished nylon bristles with superior end rounding would help prevent gum damage."



"A longer, narrower neck would make it a lot easier to reach back teeth."

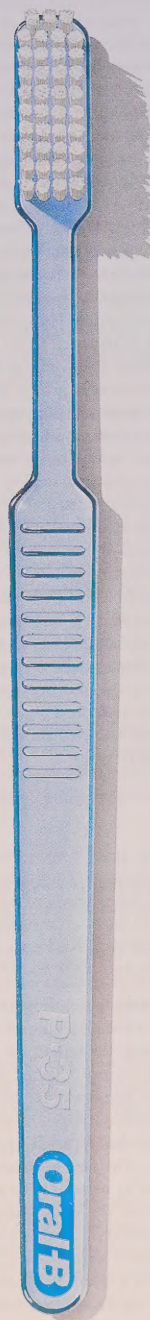


"A lateral ridged thumb grip would definitely improve brushing control."

"A longer handle would improve dexterity and make it easier for patients to reach back teeth."

The Oral-B Plus is exactly what you wanted in a toothbrush for safe and effective cleaning. So you can feel as confident in recommending this brush as your patients will be in using it. With features like these, the Oral-B Plus is just what the dentist ordered.

ASSEMBLY BY ORAL-B.



ABSTRACTS

THE EFFECT OF A NEW ELECTRIC TOOTHBRUSH ON SUPRAGINGIVAL PLAQUE AND GINGIVITIS

Baab, David A. and Johnson, Robert H.
Journal of Periodontology June 1989

This study was conducted over a four week period on forty adults with moderate gingivitis. Moderate gingivitis is the mean Gingival Index of ≥ 1.5 evaluated from the six Ramfjord teeth and Probing Pocket Depth of ≤ 5 mm. Twenty subjects received a manual brush and were instructed in Modified Bass technique. Twenty subjects received Interplak (TM) and instructions on the proper use of the device. Both groups were instructed to brush for three minutes, twice a day and were restricted from any other oral hygiene aids. Over the four week period both groups had lowered Plaque Index scores. The Interplak group had significantly lower (mean percent) plaque-infected surfaces due to Interplak's increased effectiveness in the interproximal areas (MB, ML, DB, DL). When evaluating buccal and lingual surfaces there was no significant difference between groups. The Interplak group showed a statistically significant improvement in the Gingival Index scores over the manual group. However, isolated GI scores (interproximal; M & D surfaces) failed to show a significant difference between the two groups. The Gingival Bleeding Index scores were not significantly different between groups until week four, when the Interplak group demonstrated a lowered GBI. Both groups initially (weeks one and two) exhibited a high number of abraded areas but these areas diminished by the fourth week (possibly due to non-supervised brushing in the final weeks). At the completion of the study both groups were given an Interplak (TM) electric brush; the one group having had repeated instruction with the other group having only minimum instruction. Six months after completion of the study twenty-seven of the forty subjects were contacted by phone to determine the long term use of Interplak (TM). Sixteen of the twenty-seven were using the brush but only seven were following the twice a day regime despite the fact that most subjects had praised the brush's effectiveness. The subjects tended to revert to their previous oral hygiene habits. During the four week study the Interplak (TM) proved more effective than manual brushing in reducing supragingival plaque and gingivitis, however subjects discontinued its prescribed frequency of use after six months.

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EFFECT OF 0.12 CHLORHEXIDINE ON BACTERIAL RECOLONIZATION FOLLOWING PERIODONTAL SURGERY

M.G. Newman, M. Sanz, S. Nachnani, C. Saltini, L. Anderson
Journal of Periodontology 1989; 60:577-581

Previous studies indicate that during the post-surgical period of periodontal treatment bacterial control can limit inflammation and enhance wound healing. Because of the friable and tender condition of the gingiva following surgery, plaque control alone may be difficult. As well as meticulous homecare, the use of antimicrobial agents in the prevention of periodontopathogens could prove very helpful. The group studied, consisted of 40 adult patients diagnosed with AAP Class II periodontitis. The patients received a full mouth scaling and root planing followed by osseous periodontal surgery in one quadrant and dressing placement. The study group was divided and each group received 0.12% chlorhexidine gluconate (CHx). (Peridex) oro-placebo mouthrinse. The patients were clinically and microbiologically evaluated at 1,2,4, and 6 weeks post-operatively. At the 2 week post-operative evaluation significant microbial population reductions

(recolonization) were noted for the CHx group as well as changes in the quality (type) of bacteria. There was little change in the bacterial populations of the placebo group. The most significant bacterial quality and quantity changes were noted at the 6 week evaluation with decreases in Streptococci (85.8%) gram-negative rods (94.5%) and *Actinomyces* (91.7%). *Actinomyces* has been associated with gingivitis and clinical periodontitis. This study indicates that CHx significantly reduces bacterial re-colonization associated with inflammation, gingivitis, periodontitis, and impaired wound healing.

Carol Barr Overholt, RDH
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CLINICAL ENHANCEMENT OF POST-PERIODONTAL SURGICAL THERAPY BY A 0.12% CHLORHEXIDINE GLUCONATE MOUTHRINSE

M. Sanz, M.G. Newman, L. Anderson, W. Matoska, J. Otomo-Corgel, C. Saltini
Journal of Periodontology 1989; 60:570-576

The theory that microbial infection seriously hampers surgical wound healing has been well documented and is widely supported. Studies indicate that microorganisms at wound sites may produce toxins, stimulate inflammation, consume needed oxygen, and impede connective tissue repair. Clinical studies show that careful plaque control and the adjunctive use of Chlorhexidine Gluconate (CHx) can be beneficial to wound healing. The purpose of this study was to observe the effect of a lower concentration of CHx (0.12% vs. .2%) on wound healing, over a 6 week (vs 2 week) healing period. Forty (40) patients were recruited and met a classification of AAP Class III periodontitis. All patients underwent the following:

- i) baseline evaluation. Full mouth scaling and root planing.
- ii) osseous periodontal surgery and dressing placement over the surgical site
- iii) assignment and instruction in the use of the mouthrinse. Each group received either CHx 0.12% or a placebo mouthrinse.
- iv) Evaluations at 1,2,4 and 6 weeks.

The results of the study confirmed that 0.12% CHx significantly reduced gingival bleeding, plaque accumulation (visible reduced by 99%), and degree and severity of gingivitis during the 6 week observation period. Probing depths showed no significant difference in either group and researchers attributed this to the short duration of the study. Patients rinsing with Chx indicated less post-operative pain and showed better epithelialization. Sixty-seven (67%) of the Chx group testified that they liked this astringent taste of the mouthrinse, while 24% proclaimed dislike, primarily due to the burning sensation commonly acknowledged with prolonged use. Some extrinsic stain was noted in the Chx group (47%) but this did not hamper patient compliance. This study indicated that CHx mouthrinse did enhance post-periodontal surgical therapy during a 6 week observation.

Carol Barr Overholt, RDH
St. Catharines, Ont.

THE EFFECT OF INFLAMMATION AND PRESSURE ON PROBE DISPLACEMENT IN BEAGLE DOG GINGIVITIS

Garnick, J.J., Keagle, J.G., Searle, J.R., King, G.E., and Thompson, W.O.

Journal of Periodontology, 1989; 60:498-505

The purpose of this study was to determine the effects of probing pressure and gingival inflammation on the location of the probe tip, in relation to the base of the gingival crevice and the most coronal connective tissue attachment. Three groups of Beagle dogs provided

three levels of inflammation for clinical criteria. On selected teeth, an electromechanical instrument recorded probe tip displacement (mm) and pressure as the tip advanced at a study speed. The probe tip was programmed to stop at pre-determined pressures. After the probes were attached at their final resting positions, the dogs were sacrificed and adjacent sections with (experimental) and without (control) the probe tips were prepared. Clinical and histometric measurements were recorded and the results evaluated. Histological evaluation revealed only two levels of inflammation, health and disease which were used as guidelines in the data analysis. Landmarks used for histometric evaluation involved distances (mm) from the cemento-enamel junction to 1) the base of the gingival crevice, 2) the most coronal connective tissue attachment, and 3) the probe tip. Since landmarks and the probe tip all moved apically, in a similar manner from health to disease, inflammation was cancelled out as a factor in probe tip position. This lack of statistical significance may be due to the relative small sample numbers or the poor correlation of the dog model as compared to the human model where inflammation is concerned. However, in clinical and histological evaluation there was a significant relationship of probe tip position to pressure. This study suggests the use of detailed instrumentation that will record standardized and accurate measurements of desired landmarks through appropriate forces. The researchers recommend that further research be carried out to validate the existing study in relation to humans. The dental community recognizes the significance of probing for the diagnosis of disease, assessment of disease activity and the evaluation of treatment. As a result of this and other studies, the clinician utilizing traditional probing techniques asks the questions, "How accurate are probing measurements taking into account the variables applicable to the probe design, the patient, and the clinician?" Perhaps accuracy may be improved upon by the difference between two measurements taken by the same probe, at the same site and by the same clinician.

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CHEMOTHERAPEUTIC CONTROL OF PLAQUE AND GINGIVITIS

Robert S. Turnbull, DDS, MScD

Classic studies by Loe et al¹ and Theilade et al² have demonstrated that a causal relationship exists between bacterial dental plaque and gingivitis. In their experimental gingivitis model it was also established that gingivitis is reversible by reinstitution of adequate plaque control measures. However, many patients do not have the motivation and discipline to maintain good oral hygiene. Furthermore, some patients have impairments such as arthritis, Parkinson's disease or simply poor manual dexterity which preclude proper brushing and flossing. Thus, a mouthrinse which would help control plaque and gingivitis would be a valuable adjunct. There are a number of products available which make this claim and it can be confusing for a dental practitioner to evaluate their effectiveness.

The purpose of this article is to give an overview of the mouthrinses available, discuss their efficacy in the context of the ADA and CDA guidelines and lastly, offer indications for their use.

Guidelines

Large research efforts have been directed toward the development of anti-plaque mouthrinses intended to be used by the general public. Some products have been very heavily advertised and claims based on

somewhat dubious clinical research trials. Thus, in 1986, the Council on Dental Therapeutics of the American Dental Association³ established research guidelines that a mouthrinse must fulfill in order to receive their seal of acceptance as an aid to controlling supragingival plaque and gingivitis. The Canadian Dental Association has a Committee for Consumer Products Recognition under the chairmanship of Dr. F. Michael Eggert. They developed a set of Canadian guidelines for the chemotherapeutic control of gingivitis.⁴

The CDA guidelines conform not only to the ADA guidelines, but also incorporate concepts tested through Canadian and European clinical experience with chemo-therapeutic agents used in the control of gingivitis. If a manufacturer wishes a product to receive these committees' seal of acceptance and recognition they must submit their research studies for evaluation. Currently in the U.S.A. **Listerine** and **Peridex** (chlorhexidine) have the Council on Dental Therapeutics' Seal of Acceptance. In Canada some products are now under review by the CDA Committee for Consumer Products Recognition. It should be made clear that both the CDA and ADA guidelines exclude from consideration the issue of the control of periodontitis. Topical chemotherapeutic agents are of little value in treating periodontitis.

A partial listing of the information that the CDA Committee for Consumer Products Recognition will require in order to evaluate a chemotherapeutic product is as follows:

The characteristics of the study population should represent the typical product user. A log must be kept of mechanical plaque control measures.

Two studies conducted by independent investigators will be required; each study is to be of a minimum of six months' duration. Active products should be used in a normal regimen in comparison with placebo control or, where applicable, an active control. Patient assignment to study groups should be at random.

The periodontal index (Russell's Index or equivalent) must be reported for each study group at the initiation of the study. (This indicates the type of patients in which agents have been tested and ensures a balanced composition of study groups.)

Plaque and gingivitis scoring and micro-biological sampling should be conducted at baseline, six months and at an intermediate time. Measurement of gingivitis is to include a measure of superficial sulcular bleeding. The basic unit of statistical analysis and reporting is to be the patient.

At the end of the study the active patient group must differ significantly from the placebo group AND also its level of gingivitis must have been reduced to at least a mean gingival index of 0.75 per patient when measured on the scale of Loe and Silness. (All patients must have clinically significant gingivitis at the beginning of the study.)

Microbiological sampling should estimate plaque qualitatively in terms of microbial species in addition to indices which measure plaque quantitatively.

Microbiological and clinical monitoring should ensure that there is no overgrowth of periodontal or other oral pathogens or opportunistic organisms in the mouth during the course of the study.

The active chemotherapeutic agent in a product must be identified along with its mode of action.

The toxicological profile of products should include carcinogenic and mutagenicity assays in addition to generally recognized tests for drug safety. The main reason for study dropouts must be recorded and reported. The CDA and their Committee are to be commended on their leadership in this area.

Chlorhexidine

Chlorhexidine is, next to fluoride, the most intensely researched preventive agent in dentistry. Its efficacy is well established and some studies have shown plaque and gingivitis reductions as high as 50 per cent from twice-daily rinsing with a 0.12 per cent solution.⁵ Side effects such as epithelial desquamation, altered taste sensation and staining can occur from long term use. No product containing Chlorhexidine is presently available in Canada. In the United States and the United Kingdom. Chlorhexidine-containing home care products are available on a prescription-only basis. For a more detailed discussion the reader is referred to a literature review by Fardal and Turnbull⁶ and another by Pruthi published elsewhere in this issue of the JCDA.

Sanguinarine and Plax

Sanguinarine is an alkaloid extract from the bloodroot plant *Sanguinaria Canadensis*. It is available in several over-the counter products. **Viadent**, both as a mouthrinse and toothpaste, had shown in some earlier studies to be effective in the reduction of plaque and gingivitis.⁷ **Plax** is a mouthrinse intended to be used before brushing. It is purported to remove more plaque than just brushing.⁸ Both of these extensively advertised products require additional long-term clinical investigation.^{9,10}

Listerine

Listerine has been used for more than 100 years and recently received the ADA seal of acceptance as an aid in controlling supragingival plaque and gingivitis. It is a combination of phenol-related essential oils — eucalyptol and thymol mixed with methol, methylsalicylate and alcohol. In a recent study subjects rinsed twice daily with **Listerine** or a control solution and maintained usual oral hygiene procedures. Those rinsing with **Listerine** had a 36 per cent reduction in plaque and gingival scores as compared to controls at the end of six months.¹¹ Other studies have shown somewhat similar results. Sometimes **Listerine** causes a temporary burning sensation that users find disagreeable although the taste becomes more agreeable with continued use. It does not cause extrinsic tooth stain, promote calculus formation, cause mucosal aberrations or alter taste perception. One concern regarding the long-term use of an antiseptic mouthrinse is the possible emergence of resistant microbial forms. A study examined the effect of daily rinsing with **Listerine** for six months on the supragingival plaque microflora. The results found that there was no emergence of resistant microbial forms or opportunistic pathogens.¹²

CDA Approval

Chlorhexidine, Viadent, Plax and Listerine have not yet been evaluated under the CDA guidelines to assess clinical efficacy. When any product meets CDA guidelines for chemotherapeutic control of plaque and gingivitis, the Dental Profession will be informed immediately of the recognition and advertisements will carry the CDA Seal of Recognition.

Subgingival Irrigation

Oral rinsing has very little effect on plaque already formed subgingivally. Oral irrigators such as **Water-pik** make it possible to deliver chemically active agents into periodontal pockets and subgingivally. A study by Ciancio et al. focused on irrigating with **Listerine** from a **Water-pik**.¹³ The results showed a greater reduction in plaque, gingival bleeding and bacterial counts as compared to a control solution.

Post-surgical rinsing

It has been customary to place a periodontal dressing following periodontal surgery. Some clinicians however have found that surgery sites do as well or better without standard periodontal dressings. A problem arises when dressings are not used in that oral hygiene efforts

during the immediate postsurgical phase may be painful and difficult. An effective antimicrobial mouthrinse would be beneficial at this time.

Listerine has been used for this purpose and was 29 per cent more effective than saline for reducing plaque and also improved wound healing.¹⁴ Chlorhexidine has also been utilized in a similar fashion.

General indication for mouthrinses

Chemotherapeutic mouthrinses which reduce plaque and gingivitis can be useful in the daily practice of dentistry. The drawback is that they cannot be expected to significantly alter subgingival plaque. Thus, they should not be regarded as a panacea but rather an adjunct to mechanical methods of plaque control. In certain situation and with many patients good oral hygiene control is difficult and the use of a mouthrinse which meets CDA and/or ADA guidelines could be of clinical benefit.

Indications for their use include:¹⁵

1. Xerostomia. This condition can be a side effect from many medications and reduces the amount of saliva making plaque control more difficult.
2. Gingival hyperplasia. Various drugs such as phenytoin, nifedipine and cyclosporin may have this property as a side effect. The overgrowth of gingival tissue makes plaque control cumbersome.
3. Extensive splinting or fixed prostheses. Interproximal cleansing can be a problem in these cases.
4. Orthodontic appliances.
5. Implants.
6. Intra-oral fixation.
7. Immediate post-periodontal surgical period.
8. Patients with poor manual dexterity or medical conditions which preclude adequate oral hygiene techniques.

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TOOTH LOSS IN PATIENTS WITH MODERATE PERIODONTITIS AFTER LONG TERM MAINTENANCE CARE

Walter R. Wood, George W. Greco, Walter T. McFall Jr.
Journal of Periodontology 1989; 60:516-520.

This study was done to assess the long term results of periodontal therapy on a group of recall patients treated in a dental school clinic and kept on a maintenance program for a period of 10 or more moderate periodontitis, were used for the study. The average age was 45 years (range 24-67) and 41 were female. The periodontal therapy included scaling and root planing, curettage, occlusal adjustment, gingivectomy, flap surgery, flap curettage, and osseous contouring. At the time of the initial examination 1,607 teeth were present. During the maintenance period a total of 115 (7.1%) teeth were lost, 88 (5.0%) of these were lost due to continuing periodontal disease. Maxillary and mandibular (particularly maxillary second molars) were most frequently lost. Of the 164 furcation involved teeth, 23% were lost. Canines were the teeth least frequently lost. Although this study was done in retrospect, where all the indices were worded by different clinicians and periodontal therapy was not standardized, the results are equivocal to the private practice setting. It must be kept in mind, however that secure periodontal cases were not considered.

The results would indicate that particular attention be paid to second molars at recall visits and that plaque reduction by the professional figures highly in overall tooth loss.

This study confirms there is a low rate of tooth mortality when patients with periodontal disease are treated and kept on a maintenance program.

THE PRESENCE OF NICOTINE ON ROOT SURFACES OF PERIODONTALLY DISEASED TEETH IN SMOKERS

Murray, J.A. Cuff, Michael J. McQuade, Michael J. Scheidt, Donald E. Sutherland, and Thomas E. Van Dyke
Journal of Periodontology. 564: Vol. 60, number 10, Oct. 1989.

Conventional non-surgical periodontal therapy plus a maintenance programme is effective in many cases of periodontal disease. Some patients will, however, continue to lose attachment. While inadequate oral hygiene practises and continued susceptibility to specific pathogens play a part, it is suspected that other factors are involved.

Nicotine has been shown to retard wound healing and is implicated in acute necrotizing ulcerative gingivitis. Studies have shown that pocket reduction is compromised for smokers following non-surgical therapy, and reduced alveolar bone height is apparent. Smokers also have deeper pocket depths than non-smokers with comparable oral hygiene.

In vitro studies have shown that tobacco depresses the immune system, specifically the phagocytosis and chemotaxis of human polymorphonuclear leukocytes, decreases lymphocyte viability and reduces production of antibodies. Mast cell degranulation has also been shown to be accentuated.

Cotinine, the major metabolite of nicotine has been measured in the gingival crevicular fluid of periodontally involved smokers in greater amounts than in their saliva.

Most nicotine in the particulate phase of tobacco smoke is absorbed rapidly through the skin, mucous membrane and lung alveoli. In addition to nicotine's local irritation, fibroblasts are stimulated to increase their levels of collagen production, while at the same time, decreasing its secretion. Small concentrations of nicotine have been shown to alter the orientation and attachment of fibroblasts to root surfaces.

The purpose of this study was to compare nicotine levels on root planed and non root planed teeth.

Twenty nine single rooted, periodontally involved teeth were extracted from eleven smokers. Each crown was removed and the roots divided equally. Half of each root was root planed and the other half left untreated.

The remaining nicotine levels were assayed via the methylene chloride technique and compared on a nicotine per root weight basis.

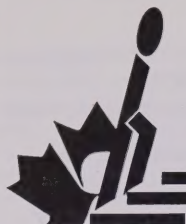
The results of this study show that nicotine is largely removed by thorough root planing. These results are likely to be short lived however, due to continued nicotine intake.

One recommendation may be to advise patients to abstain from smoking throughout the active phase of treatment and into the post-operative stage. The length of this latter stage is yet to be determined.

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Editor's Note: Thank you to the Niagara Regional Dental Hygienists' Association for submission of the abstracts for this issue.

CONTINUING EDUCATION



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Manager, CIDA Professional
Awards Program
Canadian Bureau for International
Education
85 Albert Street, Suite 1400
Ottawa, Ontario K1P 6A4
Tel: (613) 237-4820
Fax: (613) 237-1073

ALGONQUIN COLLEGE OF APPLIED ARTS AND TECHNOLOGY

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PROFESSORS: DENTAL HYGIENE AND DENTAL ASSISTANT PROGRAMS

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Teaching assignments will involve both theory and clinical courses in the Dental Hygiene/ Dental Assistant Programs.

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START DATE: August 1990.

For more information contact Mrs. S. Couture, Chairperson, Dental Programs, Algonquin College 1-613-727-7602.

Please apply in writing, quoting competition number, to:

Algonquin College
Human Resources
1385 Woodroffe Avenue
Nepean, Ontario
K2G 1V8

COMPETITION: 50-90

ALGONQUIN

AN EMPLOYMENT EQUITY EMPLOYER

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Do you have communications skills and leadership potential? Do you have organizational ability and initiative? Are you interested in enhancing your skills by leading a national campaign promoting oral health and dental hygiene to all Canadians?

CDHA NEEDS YOU!

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This prestigious position begins immediately. You will be invited to attend the CDHA Annual meeting in Winnipeg, June 1990. All expenses for this position are covered by CDHA.

Please send a resume and letter outlining how you can help.

Send to: Canadian Dental Hygienists' Association
Attn: Public Relations Council
1018 Merivale Road, Suite 201
Ottawa, Ontario
K1Z 6A5

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Fifty (50) words or less, per ad. minimum \$25.00. Each additional word 50¢. Payment must accompany order or ad will not be placed. Closing date for receipt of copy is first of month preceding month of publication — February 1 for Spring issue. May 1 for Summer issue. August 1 for Fall issue and November 1 for Winter issue. Display classified rates based on ½ page (\$400.00) and ¼ page (\$200.00) only. Non cancellable after closing date. No agency commissions on classified advertising. Ads will not be taken by telephone. Direct advertising copy, with cheque to:

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MINISTRY OF HEALTH Community and Family Health Services REGIONAL SUPERVISING DENTAL HYGIENIST Dental Hygienist 2

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\$35,357 to \$40,721

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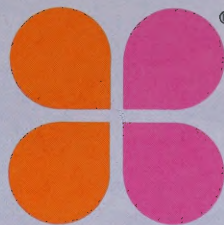
If you have an interest in providing these services and have the following qualifications we want to hear from you.

- Graduate from an accredited School of Hygiene with a diploma in dental Hygiene or equivalent, registration and license as a Dental Hygienist in British Columbia; or permit granted by College of Dental Hygienists of British Columbia.
- Travel is a requirement of this position. Transportation arrangements must meet operational requirements of the Ministry.
- Applicant is subject to satisfactory references including police record review. Certain police records may preclude appointment to this vacancy.
- The Ministry of Health has a smoke-free policy.

Forward resumes, quoting competition number, to Ministry of Health, Ms. Wendy Schmidt, Human Resources Officer, Regional Human Resources Office, North 1444 Edmonton Street, Prince George, British Columbia, V2M 6W5

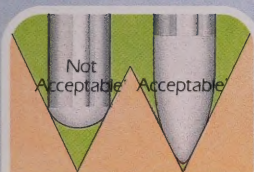
Appointment will be made as soon as possible from applications received.

Butler



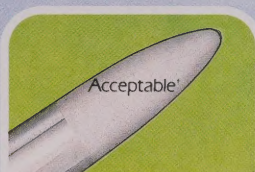
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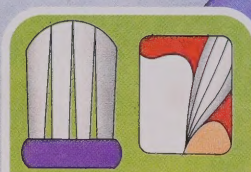
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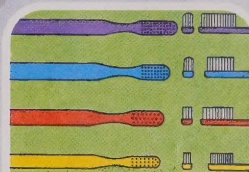
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Exclusive shape prevents bristles from bunching up, allowing a flexible tip to penetrate sulcular areas. The design positions bristles to reach into the sulcus regardless of angle.



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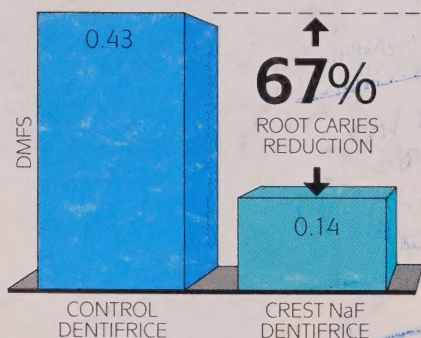
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NOW CREST IS THE ONLY DENTIFRICE CLINICALLY PROVEN TO HELP PREVENT FRUSTRATING ROOT CARIES



We don't have to tell you about the difficulties and frustration in treating certain root caries, but we can give you some new clinical information on prevention.

Crest with sodium fluoride has now been shown to reduce the incidence of root caries by 67% in a controlled clinical study involving 810 adults over 54 years of age! And, considering a

oral health survey reported 25% of patients over age 40 have at least one carious or filled root surface lesion,² that's important to know.

So give your patients the clinically proven advantage against root caries that only Crest has been shown to offer. Recommend with confidence.

References: 1. Jensen ME, Kohout F. The effect of a fluoridated dentifrice on root and coronal caries in an older adult population. JADA 1988;117:829-832 2. 1985 NIDR adult oral survey. Oral Health of United States Adults (1985-1986)



"Crest contains sodium fluoride which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care." CANADIAN DENTAL ASSOCIATION

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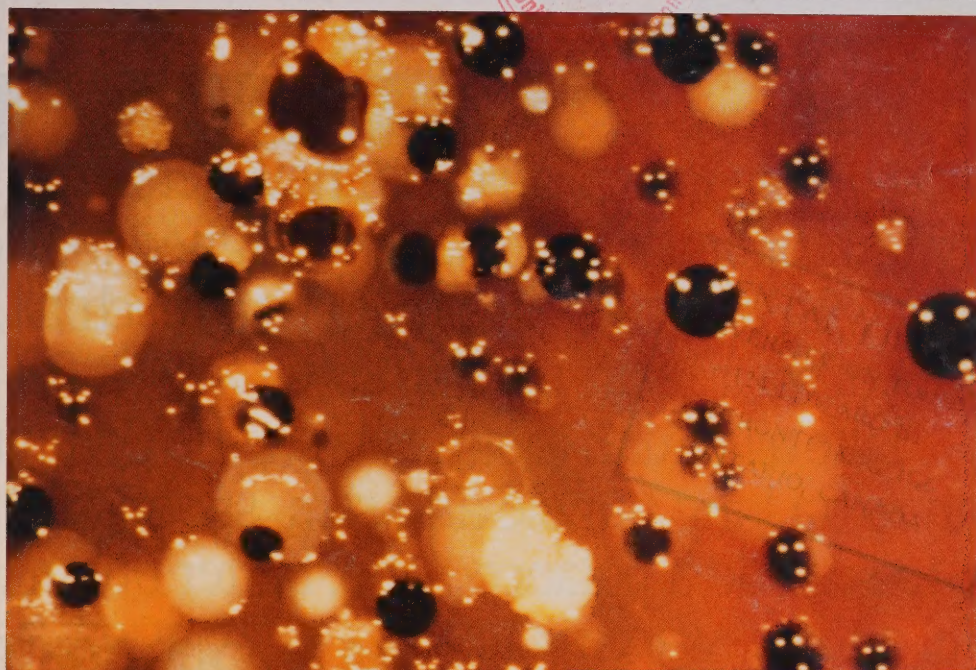
The clinical recommendation for root caries

THE CANADIAN DENTAL HYGIENISTS' ASSOCIATION
JOURNAL DE L'ASSOCIATION CANADIENNE
DES HYGIENISTES DENTAIRE

PROBE

Volume 24, no. 2

Summer 1990 été

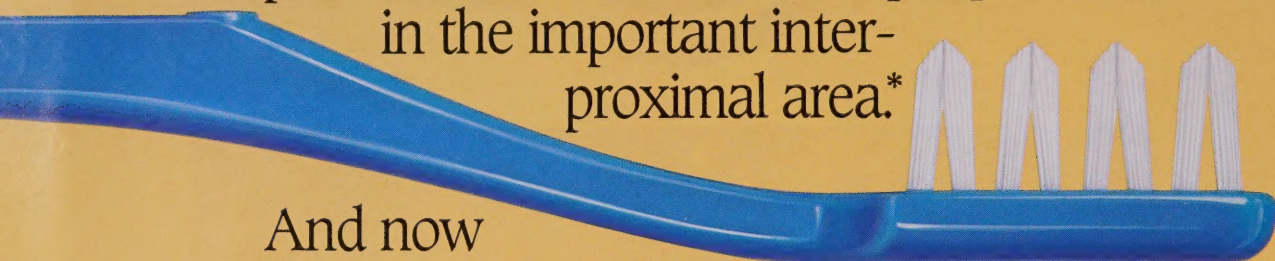


Micro-organisms

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A new version of the Jordan V Tuft advantage, clinically proven to remove more plaque.

Conclusive evidence from clinical studies has shown that the Jordan V tuft soft toothbrush provides the most effective plaque removal in the important inter-proximal area.*



And now that advantage is available in a new version – the Jordan Compact V, specially designed to allow patients with a smaller dental arch to reach all surfaces of their teeth comfortably.

Like all Jordan toothbrushes, the Compact V has an extra long handle and slim, spoon-shaped neck, to provide a balanced grip, better brushing control and easy access to the posteriors.

With the addition of the new Compact V, the Jordan family of plaque fighters is now complete.

THE PLAQUE FIGHTERS

JORDAN SOFT V (ADULT)

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Cleaner teeth. Guaranteed.

For further information write to
"The Jordan Toothbrush",
c/o Frank W. Homer Inc., P.O. Box 959, Station "A",
Montreal, Quebec H3C 2W6.

*"Evaluating cleaning efficiency of different toothbrush designs and textures". Sam L. Yankell et al., University of Pennsylvania, J. Soc. Cosmet. Chem. (May/June, 1983)

"Access to interproximal tooth surfaces by different bristle designs and stiffness of toothbrushes." Per Nygaard-Ostby et al., Jordan, Oslo, Scand. J. Dent. Res. 1979.

"An in vitro study of the relative effectiveness of toothbrush cleaning/coverage." Sam L. Yankell, University of Pennsylvania, J. Dent. Res. 1979.

"Role of brushing technique and toothbrush design in plaque removal." Axel Bergenholz et al., University of Umeå, Scand. J. Dent. Res. 1984.



By Marilyn Goulding,
R.D.H., B.Sc.

READ, FOR YOURSELF AND YOUR PROFESSION

Every once in a while you hear a statement which really stands out in your mind; something you may have heard several times before but, due to the circumstances or setting, its impact was not felt. I was stopped dead in my tracks recently, by such a statement. It came after attending a continuing education course on oral pathology. I was feeling terribly inadequate; having been completely confounded by the difference between a mucocele and salivary carcinoma. Upon admitting this frustration to the guest lecturer he said, "Well, you know, the purpose of continuing education is to locate the problem. The real learning comes later."

I asked our astute professor how I could go about this quest for better knowledge in the area of oral pathology. He didn't give me a concise set of study notes or a mini-workbook; he recommended a text book! The kind we once bought in school, way back when. Remember those thick, heavy volumes which we used to decorate with yellow highlighter? He wanted me to actually read all the way through! He wanted me to devour it as I would the latest Margaret Atwood!

Think about that for a moment. Somewhere along the line we have lapsed into the habit of having our knowledge spoon-fed to us. We attend lectures, workshops, and conventions making a few notations and conclude that we've had our

quarterly infusion of knowledge. I ask you, how many textbooks have you purchased since you graduated? The authors continue to update their books for a reason; the information changes. Even Esther Wilkins would probably advise you to throw out her first issue of the "Clinical Dental Hygienist" and replace it with the most current.

Continuing education locates the problem. Study provides the key! But all this is going to take a lot of work you say. Yes, that's true but we are, after all, professionals and with that comes the responsibility to utilize the self-discipline that is necessary to stay informed. Dental hygiene is out there demanding its recognition as a true profession, emerging, we call it, from the ranks of the auxiliary. Well I'll tell you, in assuming this position, we had better be able to deliver! We should be ready to discuss subjects like oral pathology, microdiagnostics and chemotherapeutics on a professional level.

It is unrealistic to think that we can continue to study at the same rate we did while attending school. We can, however, make periodic visits to the nearest medical library (check with your local university), and you can try the publishers' booths at local conventions. Although *Probe* does strive to meet the growing need for continued information, any one publication is limited in its size and scope.

Read! It's something that even those of you in the farthest-reaching areas of Canada can do. You may not make it to the national convention but you can continue your own education on a more individual

level, even during times of compromised personal priorities.

I hope this issue of *Probe* will help to enlighten you in the area of microdiagnostics, and I hope you won't stop here but continue to pursue the subject on your own or in study groups. Good luck.

Dear Editor

The recent *Probe* had some great articles! The planning council's ideas are wonderful and will give hygiene a strong future. I'm glad to be a member.

Thank you,
Jane Waite



Dear Editor

Congratulations!

From cover to cover, the winter issue of the Canadian Dental Hygienists' Journal was superb! Your editorial was one of the best I have ever read and the articles you included were thought-provoking. In my opinion your first effort is tremendous. The dental hygiene profession is indeed fortunate to have someone of your calibre as the Editor of their professional Journal.

Sincerely,
Ms. M. Wilson



What's all the chatter about Trident with Xylitol?

There's been a lot of talk about xylitol lately. Like many other health professionals, you may have heard about it. But do you really know about it? Perhaps it's time you did.

Xylitol - more than just a sweetener.

Xylitol is, quite simply, a natural-source sweetener. However, clinical studies have demonstrated that xylitol is also an effective weapon against tooth decay.

Research indicates that xylitol fights cavities.

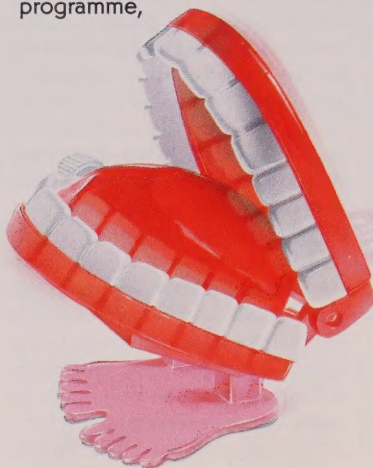
Extensive research conducted over the last decade shows that xylitol cannot be metabolized by decay-causing oral microflora (i.e. *Streptococcus mutans*). As a result, xylitol does not promote adhesion and formation of dental plaque.

What's more, xylitol has been observed to actively inhibit the metabolism of *S. mutans*.

Tell your patients about it.

This discovery has professionals the world over, talking. You, too, can do the same and talk to your own patients about Trident.

When used in conjunction with a regular oral hygiene programme,



Trident with xylitol can play a significant role in cavity prevention; particularly after



snacking, when access to a toothbrush or dental floss may not be available.

Read about it.

All xylitol case studies are available to you on request.¹ In the meantime, we invite you to order your own Trident sample packs. And do some chatting of your own.

¹Case studies include: The Finnish Xylitol Study, 1982-1987; The French Polynesian WHO Study, 1981-1984; The WHO Hungarian Study, 1981-1984; The Montreal Chewing Gum Study, 1985-1987; University of Michigan Study, 1988.

For more data write to: Xylitol Information, Warner-Lambert Canada Inc., 2200 Eglinton Avenue East, Scarborough, Ontario M1L 2N3

¹Reg. TM/M déposé. Warner-Lambert Company, Adams Brands.



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____ x Trident Assorted (Peppermint, Cinnamon, Freshmint, Fruit and Bubble Gum)
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The Canadian Dental Hygienists' Association Journal: Probe is the official publication of C.D.H.A. C.D.H.A. invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to Probe do not

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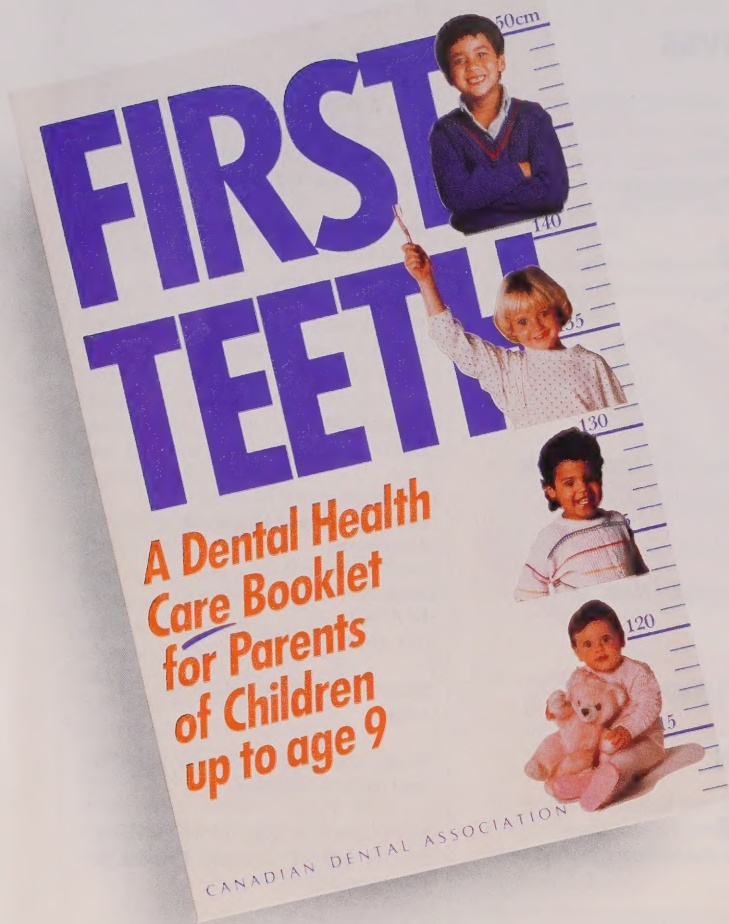
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Because Your Patients Have Little Patients of Their Own

First Teeth: the award-winning program from the Canadian Dental Association that helps you help parents care for their children's dental health. Supervised by a team of experts in children's dental care, sponsored by Colgate Junior, First Teeth is the CDA's most popular program ever. And its best-loved.



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The First Teeth booklet addresses parents' questions and concerns clearly and directly — 24 pages packed with practical advice and helpful illustrations. Parents love First Teeth because it's professional advice they can use with their own "little patients" every day.

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The First Teeth growth chart for children is stacked high with wonderful drawings and fun facts. Kids love First Teeth because it makes dental health child's play.

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First Teeth lets you drive your prevention messages home. Lots of homes. According to the figures, First Teeth has been provided to hundreds of thousands of Canadian parents. You'll love First Teeth for the same reason almost six thousand dentists and dental hygienists do: it's working.

Order Now

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To order, simply call one of the toll-free numbers below (please have your VISA or Mastercard ready):

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**CANADIAN
DENTAL
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DENTAL HEALTH
Good For Life

News from the Schools

UNIVERSITY OF MANITOBA SCHOOL OF DENTAL HYGIENE

FACULTY

Ms. Harriet Rosenbaum joined the full-time faculty for 1989-90 in the position of Program Co-ordinator for Second Year Dental Hygiene. New part-time faculty members include Ms. Signe Arason, Ms. Debbie Paradoski, Ms. Sandra Ross and Ms. Charlene Gagnon.

DEGREE PROGRAM PROPOSAL — UPDATE

In November 1989, the University of Manitoba Dental Faculty Council approved a proposal for a degree completion baccalaureate program in Dental Hygiene. The proposal has been submitted to the University Senate for its consideration and approval. A response is expected by summer/fall 1990.

FACULTY OF DENTISTRY RENOVATIONS

A 10,000 sq. ft. addition to the Faculty of Dentistry has been built. New and renovated facilities will include a modern, state-of-the-art 60 chair clinic, laboratories, a new amphitheatre-style lecture room and central sterilization. Our Dental Hygiene program for 1990-91 will not commence until October 1990, because of these Faculty/School renovations.

Twenty six-students were admitted to the School for the 1989-90 academic year. Over 200 applicants had applied. Twenty of the twenty six admitted students had more than one year of previous university experience.

Senior Dental Hygiene students were involved in externships to: the Peguis Indian Reserve at Hodgson, Manitoba; the Manitoba Development Centre in Portage la Prairie, Manitoba (institution for the mentally and physically handicapped), a Veteran's hospital; a dental clinic in a resident seniors' home; and a mobile dental van operated by the Faculty of Dentistry.

25th ANNIVERSARY/ C.D.H.A. PROFESSIONAL CONFERENCE

Planning is underway for the combined 25th Anniversary of the first graduating class of the School and the Canadian Dental Hygienists' Association's First Professional Conference, to be held June 21-23, 1990 at the Sheraton Hotel, Winnipeg.

Professional program includes speakers Dr. Irene Woodall, Dr. Jane Fulton and Dr. Esther Wilkins. Planned social events include a wine and cheese reception and a riverboat dinner and cruise.



ALGONQUIN COLLEGE

The challenge of returning to normal after the fall strike has occupied most of the energies and time of staff and students alike these past few months.

The College administration with the support and collaboration of faculty, have implemented a new academic schedule for 1989/90 which has resulted in zero loss of instruction hours, but reduced non-teaching and break periods.

March found Algonquin in the midst of Hygiene admission testing for September 1990. Cathy Thom co-ordinated a co-operative testing project which includes Algonquin, St. Clair, and Georgian College. Applicants applying to these Colleges only have to go to *one* of their choices, as tests used are all validated and identical. Each College's results are then shared with the other two Colleges at the request of applicants. Next year we hope to see more Colleges participating in this project, designed to provide a more efficient and cost effective admissions system for all dental hygiene applicants in Ontario.

Dental Hygiene Services exempt from proposed G.S.T.

The proposed legislation to amend the Excise Tax Act and introduce a Goods and Services Tax, provides an exemption for dental hygiene services. The draft of Bill C-62, which had not been ratified into law at the time of printing, exempts dental hygiene services (Schedule 5, Part II, Clause 8).

If you are self-employed, your employer will not be subjected to the Goods and Services Tax for dental hygiene services.

There is no need to make changes in your working arrangements with the introduction of the GST.

There have been several staffing changes since last year. Wendy Kelly an alumnae of Algonquin College brings many years of experience to her position as a full-time faculty member. Jack Sadler has resigned from his full-time position but continues to teach on a part-time basis and finally, Suzanne Knox has decided to move on to Public Health practice in her home town of Cornwall.

In keeping with Algonquin's commitment to quality education, the Dental Clinic facility has been refurbished with new dental chairs and units. To date, as part of a three-year renewal plan all but five of the original units have been replaced; this summer the replacement will be completed.

Administration and faculty members have begun planning for the transfer of the Hygiene dentaire and Soins dentaire programs to the new French-language Community College, La Cité Collégiale. Linda Bélanger and Sylvie Martel will be moving to La Cité as full-time faculty members in September 1990. Plans are in progress to accommodate La Cité students in the Dental Clinic facilities here at Algonquin for the clinic/lab portions of the programme. This will be temporary until La Cité secures its own facilities.

C.E.G.E.P. JOHN ABBOTT COLLEGE

The fall semester got off to a rocky start with C.E.G.E.P. strike action. In November the third-year students participated with the McGill University dental students for the annual visit to Montreal schools.

Our traditional exchange with Dalhousie University involved three J.A.C. students and two Dalhousie students. In addition, five students and one instructor from J.A.C. visited Vancouver Community College (V.C.C.) and two students from V.C.C. came to J.A.C. If any other schools are in-

terested in exchanges, it proves to be a worthwhile experience. The entire student body and staff held a pot luck dinner on April 4, to present and discuss these exchanges.

Third-year students have visited water fluoridation plants, written the American National Boards, held a dinner-dance on May 19, and graduation is scheduled for June 14 with J.A.C. convocation.

The J.A.C. faculty have been planning the June conference for the Canadian Dental Health Professional Educators Association.

Research Updates

IS IT REALLY GUM DISEASE? DNA TESTING MAY TELL

Dr. Roy Page, professor of periodontics at the University of Washington, Seattle, explained that deep pockets around a tooth don't necessarily mean the patient has gum disease.

"Since all organisms have their own unique genetic structure, these new DNA probes will be able to identify the bacteria in the pockets around teeth and confirm the presence or absence of gum disease. It's a whole new ball game when it comes to diagnosing gum disease," said Dr. Page.

"Pockets around a tooth used to be a clear signal that the patient had gum disease. What we're finding now is that a patient can have these pockets with no infection. The DNA probe allows us to identify the handful of bacteria in the pockets associated with gum disease from the hundreds of bacteria normally found in the mouth."

Traditional treatment of early stages of the disease (gingivitis) includes rigorous home hygiene and regular professional treatment. Advanced cases, however, may require surgical procedures to plane the surfaces of the tooth's roots

and to restructure the tissue around the tooth, thus removing the pockets that hold the bacteria.

"Dental researchers now are exploring new ways to treat advanced periodontal disease," Dr. Page said. "One of the therapeutic options being explored involves applying antibiotics directly on the infected area. We have seen reports of clinical trials for the drugs used to treat the inflammation in rheumatoid arthritis that also appear to be effective in treating advanced gum disease," Dr. Page told attendees. "These developments may offer dentists even more opportunities to treat patients with gum disease."

TREATMENT FOR XEROSTOMIA

Pilocarpine, a drug used in prescription eye drops, is a safe and effective treatment for xerostomia, according to results of clinical trials at the National Institute of Dental Research (NIDR).

In the six-month clinical trial, pilocarpine taken orally three times per day in 5 mg capsules measurably increased salivary secretions in 20 of the 31 xerostomia patients studied. Subjective improvement in their condition was reported by 27 of the participants. Side effects from the medication were minimal and included increased sweating, flushing of the skin and increased urination.

Pilocarpine is an alkaloid extracted from the South American jaborandi plant. Its effects have been recognized for over 100 years and it has long been used in prescription eye drops to contract pupils.

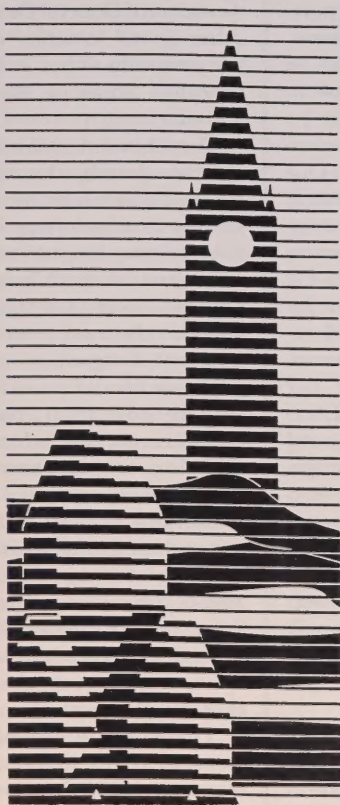
According to the study, pilocarpine is more beneficial to xerostomia patients than artificial saliva products because it actually stimulates the salivary glands. Consequently, it can only be used with patients who have some salivary gland function.

DENTAL HYGIENISTS' PROGRAM

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*Ottawa
August 25 - 29, 1990*



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accommodations.*

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The Canadian Dental Hygienists' Association has worked diligently to ensure the CDA Scientific Program meets the needs of dental hygienists. Outlined below is a list of the programs which may be of special interest to dental hygienists attending the Convention.

Pre-Convention

Saturday, August 25th

William Strupp, D.D.S.	Predictable Anterior Crown & Bridge
Imtiaz Manji, B.Sc.	The First Step to High Tech (Hands On)

Sunday, August 26th

Dick Barnes, D.D.S.	Building a More Successful Practice
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Convention Proper

Monday, August 27th

Allen Kincheloe, D.D.S.	Esthetics for the 1990's
Murray Cuff, D.D.S., M.R.C.D.(C)	Dental Management of the Medically Compromised Patient
Tom Harle, D.D.S., DIP (Prosth)	Osseointegration and the Rehabilitation of Partial Edentulism: Clinical Aspects
Paul Demers, D.D.S., M.Sc.	Management of Oral and Maxillofacial Infections
Norman Levine, D.D.S., M.Sc.D., F.R.C.D.(C)	Dentistry for the Disabled
Tom Limoli, D.D.S.	Periodontal Problems with Prepayment
Stéphane Schwartz, D.D.S., M.S.D.	Les traitements des dents primaires
Monique Michaud, D.D.S., M.S.D.	Le diagnostic des lésions buccales: quoi de neuf?
Maureen Locherer, P.D.A.	Equipment Maintenance
Marion Balla, M.Ed., M.S.W.	Effective Communication Between Staff and Clients
John Hardie, B.D.S., M.Sc., F.R.C.D.(C)	An Update on Infection Control
Lendon Smith, M.D.	Humour as a Healer
	Nutrition to Control Stress

Tuesday, August 28th

Matthias Hourigan, D.D.S.	Camera Clinic for Slide Shooters
William Bottomely, D.D.S., M.S.	An Update on the Drugs Your Patients Take
Tom Limoli, D.D.S.	Overview of Third Party Dental Care
Annette Ashley Linder, R.D.H., B.S.	Implementing Soft Tissue Management
Mike Duffy	Ottawa From the Inside
Jacinthe Larivée, D.M.D., M.R.C.D. (C)	Standards d'excellence de la parodontie clinique
Imtiaz Manji, B.Sc.	High Tech Productivity & Practice Management

Table Clinics

Ralph Phillips, M.S., D.Sc.	What's New In Restorative Materials (I & II)
Marion Balla, M.Ed., M.S.W.	Stress Management in Personal Relationships
Maureen Locherer, P.D.A.	Sterilization Techniques and Infection Control

Wednesday, August 29th

William Bottomly, D.D.S., M.S.	Diagnosis & Treatment of Common Oral Lesions
Joseph Chasteen, D.D.S., M.A.	Selecting Compatible Members of a Dental Team



By Kate MacDonald,
R.D.H., B.S., M.Ed.

WHAT'S HOT AND WHAT'S NOT IN CONTINUING DENTAL EDUCATION

For the past two and a half years I have been employed as Director of Continuing Education and Co-ordinator of Alumni Affairs in the Faculty of Dentistry at Dalhousie University. My previous background was as Director and Faculty Member in the School of Dental Hygiene, so in changing jobs, I have not been far-removed from familiar surroundings and colleagues.

A graduate degree in Adult Continuing Education has proven to be useful in my present position but most beneficial of all has been my dental hygiene background and experience. Knowledge of dentistry and dental procedures is extremely helpful when organizing courses and negotiating with prospective clinicians. A further advantage for me has been that, because of many years at Dalhousie, I know most of our clients. It is fun to see former students at courses and renew old acquaintances in the profession.

At Dalhousie, the Alumni Affairs and Continuing Education Department consists of an Assistant Dean, an Administrative Secretary, another secretary and me. There is also a faculty advisory committee that develops policies and generates ideas for programs. Together we organize and present

twenty or more programs a year. These are directed to the dental community, including dentists, dental hygienists, assistants, and technicians.

A continuing education operation is similar to a small business. It is expected, by the University, to generate income, thus we have to be cognizant of market trends - ie. "What's hot and what's not in dental continuing education." Our responsibilities include the design, writing and printing of information on courses, and newsletters which must be distributed to the clients on our mailing list. The list is constantly changing and requires frequent updating. Arrangements must be made for meeting rooms, audiovisual services and catering as well as hotel reservations and travel arrangements for visiting clinicians.

The alumni area of responsibility involves annual fund-raising, with the help of students and the Alumni Relations Committee. Alumni Weekends are held annually and include continuing education programs, class reunions and other social functions.

From the public relations aspect, my position is one that requires collaboration and liaison with dental societies and other dental organizations. Contact must be made with prospective clinicians, and deadlines must be met for printing and distribution of publicity for coming events.

Faculty members at Dalhousie are encouraged to present continuing education programs. They are invited to attend all courses

free of charge, with the exception of limited attendance participation courses and those that are co-sponsored with other groups. We frequently collaborate with the Academy of General Dentistry and other dental societies in presenting programs either in Halifax or in other areas in the Atlantic provinces.

Dental and dental hygiene students are permitted to attend courses on a space-available-basis, and each year continuing education courses are designed specifically for them. Our goal here is to encourage lifelong learning.

I have discovered that there are a variety of organizations devoted to people who are providers of continuing education, particularly dental continuing education. In addition to presenting timely programs on an annual basis, the networking benefits make joining any of these groups worthwhile. It is very comforting to be able to get instant advice from others in the same field. Occasionally two or more dental schools collaborate in sponsoring courses, especially those involving travel.

There are a number of advantages in this position; probably the most satisfying is the continuous learning aspect. I am able to attend some large meetings to scout for prospective speakers, and I attend most of the courses we sponsor. What better way to continue one's own education?



NATIONAL CERTIFICATION UPDATE



By Diane Gallagher,
B.A., R.D.H.,

WHAT IS "PORTABILITY?"

Portability implies licensure by credentials. A dental hygienist holding a license in good standing in one province would be permitted entry to register in another province without examination.

The primary regulatory issue at the national level is portability of licensure. C.D.H.A. has been negotiating this issue with the provincial licensing authorities for many years. A National Certification process which will enhance the potential for licensure in Canada on the basis of credentials is under development.

Why do we want Portability?

Dental hygienists are anxious to have one national standard for entry into practice within and across all licensing jurisdictions. Such a system presently exists for dentists.

Inequities in licensing practices for dental hygienists include:

- a) At least three different provincial systems of assessment for licensure.
- b) one province examines all candidates for licensure;
- c) one province examines candidates who have graduated five years or more previously from accredited schools or candidates from non-recognized schools;

- d) one of the provinces examines practitioners who stay in the province; therefore, those who move are penalized by licensing authorities who require this test;
- e) one province requires French-language proficiency within certain time-limits, a temporary permit is issued while the language skill is developed;
- f) one province requires a certificate in local anesthesia; a temporary permit may be issued for one year (if the candidate's qualifications fall within the five year time limit), renewable twice.

National portability would improve our ability to respond to market demands for dental hygienists, and reduce inequities between those hygienists who move and those who stay in one province. Furthermore, by developing a National Certification Process, Dental Hygiene will contribute in a tangible way to regulation of dental hygienists.

How will the process work?

The proposed certification process is modelled upon the dental model. The National Dental Examining Board certifies dental candidates who apply within one year of graduation from an accredited program (without an examination). N.D.E.B. is able to award this certificate because of the confidence it has in the accreditation process. Of several

reasons for this confidence, the following two are paramount:

- a) the participation of N.D.E.B. Representative on Accreditation Teams which evaluate programs;
- b) the Clinical Operations Review and Evaluation Process (C.O.R.E.) which takes place in conjunction with accreditation site visits of dental programs.

Licensing authorities participate in and recognize this process also, and a National Board Certificate valid within five years enables a dentist to obtain licensure in any Canadian province without examination. C.D.H.A. advocates a parallel process for Dental Hygiene.

Because responsibilities of dental hygienists vary across the provinces, C.D.H.A. acknowledges the need for a nationally recognized core of skills for entry into practice, such as are reflected in the C.D.A. Competency Profile for Dental Hygienists. Specific extra duties required by a particular province would be assessed on an individual basis (also against a national standard) established by the C.D.A. Council on Accreditation. Ideally, the province would allow hygienists to practice on a temporary permit once they had a national certificate for core skills, and then allow a period of grace to acquire additional skills. This would permit dental hygienists to continue providing dental hygiene services while working towards

acquiring provincially mandated qualifications beyond the national core, e.g. restorative skills, local anesthetic, orthodontic skills.

C.D.H.A. further acknowledges the value of adding C.O.R.E. to the Accreditation of Dental Hygiene Programs in order to strengthen confidence of the provincial licensing authorities in accreditation.

To date there has been a great deal of support expressed for a National Certification Process, however, the following events must take place while the planning process carries on:

- 1) Designate an authority for administering the Certification Process. (The C.D.A. Council on Accreditation Sub-Committee on Certification on Dental Assistants and Dental Hygienists has been suggested).
- 2) Add Clinical Operations Review and Evaluation to the Accreditation Process. (The Assistant Director of Accreditation, Susan Matheson, has this on her agenda).
- 3) Establish a table of specifications for a national examination based on the C.D.A. Competency Profile for Dental Hygienists (completed 1990).
- 4) Develop a written test-item bank based on clinical processes rather than traditional subjects, (collaboration with outside educators and licensing authorities is necessary).
- 5) Develop/adopt a clinical examination using existing resources (for example, the

American Central Regional Board Examination for Dental Hygienists which was developed by Dr. John Eisner and validated through use in the United States).

- 6) Encourage Canadian educational programs to offer refresher courses for relicensure candidates.
- 7) Develop optional sections to address specific provincial requirements beyond the national core.
- 8) Prepare the examination in both English and French.

• • •

Specific recommendations for written and clinical examinations have been developed and will be considered by the certification authority.

It is suggested that candidates for the National Dental Hygiene Examination will include:

- 1) those having formal dental hygiene qualifications from schools which have not been evaluated or recognized by the C.D.A. Council on Accreditation; and
- 2) candidates who were previously licensed but have been out of the work-force for a period of time to be designated by the specific province.

We would like to acknowledge the following dental hygienists across Canada who have contributed over the years to the estab-

lishment of a National Certification Process and Examination:

- Marnie Forgay
- Ellen Brownstone
- Marg Pyett
- Susan Haglund
- Wendy Halowski
- Bonnie Craig
- Fran Cotton
- Linda Strevens
- Sadie Hearn
- Jocelyne Long
- Elaine Good

Our hope is that a certification process for graduates of accredited schools and alternatively a National Certification Examination for relicensure, unaccredited and off-shore candidates will be realized through the proposed Canadian Dental Association's Committee on Certification for Dental Assistants and Dental Hygienists.



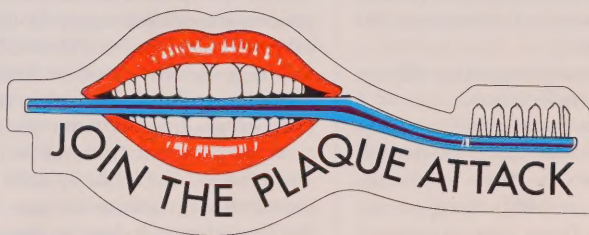
EDITOR'S NOTE:

The Canadian Dental Hygienists' Association recognizes the achievement and leadership of Dianne Gallagher in the development phase of National Certification. Ms. Gallagher was awarded Life Membership in 1989 in appreciation of her outstanding contribution.

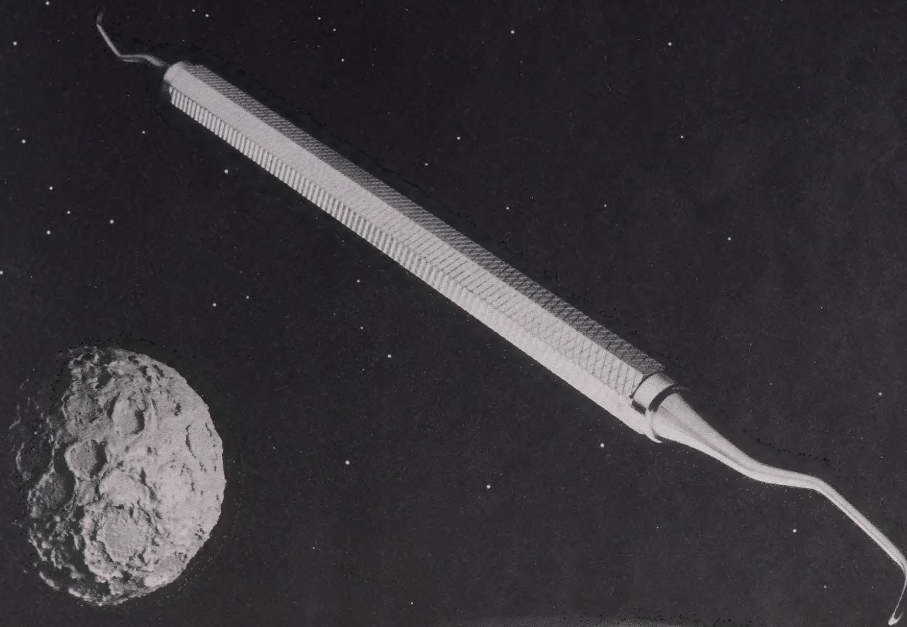


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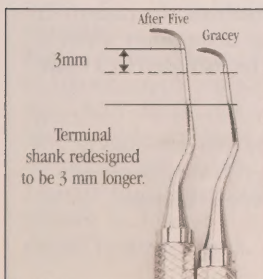
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**NEW EXPANDED
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To Polish or not to Polish?

*Properly informed, patients will
accept selective polishing*

By Mary Banford RDH, BA
Coordinator of Auxiliary Services
College of Dental Surgeons of
British Columbia

The many inquiries I have received regarding "selective polishing" suggest the need for clarification of this concept and for some ideas concerning implementation of this approach to patient care into preventive dental practice.

Over the past decade the performance of "selective polishing" has been presented as a logical alternative to polishing all teeth of all patients. Following scaling, root planing and other necessary periodontal procedures, teeth should be evaluated to determine the need for polishing. Not every patient needs to have all surfaces of all teeth polished, especially on a routine basis.

The primary determinant for polishing is to remove extrinsic stain that cannot be removed by the patient. In addition, part of the rationale for selective polishing is to reinforce to patients their role in personal plaque removal and that frequent attention to oral hygiene can result in a significant improvement. Additional reasons for this approach to polishing include the concern for polishing away the fluoride-rich outer layer of enamel and as a precaution to creating unnecessary sensitivity in the cervical portion of the tooth where enamel is thin and cementum may be exposed. Numerous studies have also shown that polishing does not improve the uptake of professionally applied fluoride by enamel over plaque and debris removal ac-

complished by the patient using a toothbrush and dental floss. Research has indicated that the pellicle on the tooth surface does not act as a barrier to fluoride. This was previously considered the prime clinical reason for polishing all surfaces of all teeth.

There is some suggestion, however, that plaque accumulation does not occur as rapidly on polished teeth as those that are self-polished with a toothbrush. The key to this apparent dilemma, "to polish or not to polish", is consistent with the approach to any other form of dental treatment - judging each patient's need individually.

In assessing the need for polishing, consideration should be given to factors such as the patients' periodontal index, caries rate, the rate and amount of plaque the patients form as well as their ability to control plaque, since some stains are incorporated in plaque and can be removed during brushing and flossing. As much stain as possible should first be removed with calculus during scaling. When polishing is determined to be necessary, the least abrasive fluoride-containing polishing paste which will accomplish the task should be selected and applied only to those surfaces requiring polishing.

Often clinicians can be their own worst enemy and assume that introducing selective polishing to patients previously "conditioned" to expect complete polishing will be met with resistance. Patients initially may indicate they prefer to have all tooth surfaces polished since it makes their teeth feel uniformly smooth and clean. How-

ever, once patients are informed of the potential detrimental effects of complete polishing, most are accepting of a selective approach to polishing. Decisions should involve the patients and it is hoped they will view them as in their best interests.

Selective polishing need not result in an ethical conflict for the dentist when billing a patient for such a procedure which he/she has performed or delegated to a dental hygienist or certified dental assistant. The time involved in disclosing all tooth surfaces for the presence of plaque following a patient's self-polishing with a toothbrush and the time spent in determining those areas requiring extrinsic stain removal may justify the full fee for coronal polishing.

However, there is nothing to suggest that the fee for polishing should be considered to be "all or nothing". Certainly a percentage of the fee for polishing could be billed to the patient according to the percentage of tooth surfaces polished.

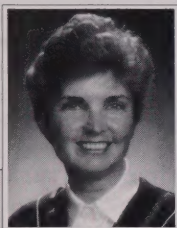
The intention has not been to imply that there is no place for coronal polishing in current preventive dental practice. However, the routine polishing of all tooth surfaces of all patients can no longer be supported. As with any other dental procedure, professional judgement based on patient need and involving the patient in the decision determines when a service is to be included in a treatment plan.

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INTERVIEW

With...



Dr. Patricia Johnson, dental hygienist, and author of the recently published study, *Dental Hygiene in Canada: A Descriptive Profile and Labour Force Behavior*

PROBE: I understand you've just reached a milestone in your life. You've recently completed requirements for your doctorate. Is that correct?

Pat: I now have a Ph. D. in Community Health from the Faculty of Medicine at the University of Toronto. My field of research is Health Administration, specializing in Health Policy and Economics, with particular application to oral health services and dental hygiene.

PROBE: Can you tell us a little about the research components of the thesis you presented recently?

Pat: I studied the work-force behaviour of dental hygienists in Canada, examining labour-force participation and time worked—that is, who is available, how much time they work, and what accounts for any differences. The use of a multi-disciplinary approach was a particular feature of the study. The conventional labour economics framework was augmented with concepts from both the sociology of work and women's studies.

PROBE: What exactly does that mean, Pat? What factors did you consider?

Pat: In addition to the conventional labour supply variables such as age, child status, and wage rate, I also considered characteristics of the occupation and the workplace. I found that all types of factors contribute to how much Canadian dental hygienists work. The study

suggests that to alter labour supply, strategies should be directed to structural aspects of the occupation (education, regulation, and professionalization) and the job (employment and work conditions), as well as to the individual's personal circumstances and alternate roles (parenting).

PROBE: I realize the study itself involves a survey. What year did you begin to collect the data?

Pat: The major source of data was a 1987 national enumerative survey of dental hygienists, residing in Canada.

PROBE: Did you look back and compare it with previous years?

Pat: Yes. There were good census data going back to 1976, and I was able to track trends among dental hygienists and, specifically, in their work-force behaviour: for example, since the population has gradually been aging, there is a greater tendency for the dental hygienist to be married and have a young child under five years of age. Despite family status changes employment has steadily increased. On the other hand, during that same period there has been a decrease in total hours worked per week.

PROBE: Why would we have decreased our overall average of working hours? Do you have any theories based on the data?

Pat: It's consistent, generally, with what's happening among all women in Canada's labour force. A greater proportion of women are working outside the home; for the period 1975 to 1985, the growth

rate for the female labour force was 46%, compared to 15% for males. Over that same time period, the length of the average work week gradually decreased.

More specifically, I conducted regression analyses to look at particular factors influencing the number of hours worked per week. Among the married group, hours worked were strongly and negatively associated with wage-rate, the presence of a very young child in the home, the amount of other household income earned, and living in Quebec rather than Ontario.

PROBE: Have you targeted an area to be more closely examined in the future?

Pat: Career satisfaction is definitely an area for future research. Quality-of-work-life factors should be examined for their effect on labour supply.

PROBE: I understand that you are the first dental hygienist in Canada to obtain a doctorate with a specific emphasis on dental hygiene. Is that correct?

Pat: It's been suggested I'm the first dental hygienist.

PROBE: You are also acting as an adviser to several of the councils within the Canadian Dental Hygienists' Association. What does your work with the councils entail?

Pat: I've always been keenly interested in my professional association. My primary role has been working with members of the Practice and Regulation council who are responsible for, among other things, monitoring dental

hygienists' supply and practice patterns; that is, what they do when they're working. The study I've just completed looked at their supply. Data still remains to be analyzed which will give us indications of their practice patterns and trends.

PROBE: At our last council meeting in Ottawa, you spoke of several of the myths about the typical dental hygienist that your data were able to shatter. Tell us about them.

Pat: There are four prevailing myths or stereotypes about dental hygienists that were found to be invalid. The first myth is that work-force attrition is high. In fact, the vast majority (89%) of dental hygienists registered to practice and living in Canada are working or available for work. Of the group who are not working, most have withdrawn temporarily to care for children. Very few are retired, just over 3% are working outside the field and approximately 7% are permanently inactive. With few exceptions, the inactive dental hygienists maintain a license to practice; that is, have the requirements necessary to re-enter the work-force.

The second myth dispelled, when 90% of all hygienists currently registered and living in Canada are already working, there is not a large pool of inactive dental hygienists who might be pulled back into the work force.

A third myth is that the work force is unstable. The findings indicate there has been very little interprovincial migration. With the exception of Nova Scotia, the proportion of survey respondents who resided in the province in which they first registered as a dental hygienist exceeded 85%; for Nova Scotia the proportion was 78%. When movement did occur, Ontario most often was the province of choice for those from the Atlantic region. Movement from the Western region was slight and tended to be inter-regional or within the region. Further

evidence of stability was the finding that dental hygienists who worked in 1987, tended to work at least 50 weeks per year rather than seasonally. One half had not changed jobs in the previous 3-year period. Similar findings were reported by Lewis for dental hygienists in 1979.

The fourth myth is that remuneration for dental hygienists is very high. The 1987 remuneration package for dental hygienists con-

I believe that to a large extent, the future is what dental hygienists want to make it, both on an individual basis and as a professional group.

sisted almost entirely of wages. The vast majority do not receive standard employment benefits. Similar findings were reported for Canada in 1979. The employment benefit portion of the remuneration package typically amounts to 14% or more for registered nurses, to whom dental hygienists have been compared, and 16-20% in other industries. Thus when estimates of dental hygienists' earnings are being used for comparison purposes they should be adjusted downwards by a factor of at least 10%, allowing for statutory holiday and vacation pay.

PROBE: Can you tell us Pat, what road did your education take in arriving at your newly acquired Ph.D.?

Pat: I completed my basic education in dental hygiene with a diploma from the University of Toronto. After graduation, I was interested in learning more. I was in clinical practice at the time and took courses on

a yearly basis. I questioned, not only the length of time and direction my learning was taking, but also the quality, when accumulated so slowly. When my oldest child entered university, I returned full-time the same year. I completed the Bachelor of Science in Dentistry (Dental Hygiene) program, at Toronto's Faculty of Dentistry.

Much to my surprise I found that it just whetted my appetite for more. By that time, however, I had completed the extent of what was available in dental hygiene in Canada. Short of leaving my family and moving to the U.S., my only option was to switch fields to acquire knowledge and skills that I could apply to improving or planning for better oral health for Canadians.

I applied to the Faculty of Medicine Health at the University of Toronto — a move that served to broaden my perspective. My research for the M.Sc degree involved an analysis of public dental health programs for the elderly. Realizing that I still had a lot to learn, I entered the doctoral program within the same specialty and undertook the more quantitative research project in the area of health human resource planning. While dental hygienists served as the case study, the model I developed is equally appropriate for testing on other predominantly female health occupations.

PROBE: In your educational process, did you encounter any obstacles, frustrations or any victories that you would like to share with us?

Pat: Oh yes, a mix of everything. Frustration yes; having been active with the professional association I have long promoted the need for degree completion and post-graduate opportunities for dental hygienists. On reaching the point when I myself wanted to progress, I did face some barriers. There was the expectation that a dental hygienist may not be interested in pursuing the avenues I sought. I

had to talk with people to convince them I was serious; then, generally, they were supportive.

I feel very grateful to three funding agencies which provided me with fellowships to support my studies. My first encounter was with the Canadian Fund for Dental Education (CFDE) and I received important, although at the time relatively small, fellowships as a dental hygienist. I was particularly pleased when I received the Thornton Fellowship, which is also open to dentists. Since that time two other dental hygienists have received that particular award.

The Ontario Gerontological Research Council assisted me during my Master's program. Perhaps of greatest significance were the fellowships awarded through the National Health Research and Development Program. These awards supported me through the second year of my Master's and four years of my doctoral program. Not only was I appreciative of the very significant financial support but also for the fact that research in dental hygiene is deemed worthy and complimentary to the Department of Health and Welfare's research and planning priorities. I am also grateful to C.D.H.A. and C.P.H.D.Q. for their support.

PROBE: You are also involved in dental hygiene activities on a larger scale. You're active with the International Dental Hygienists' Federation and are currently serving as their President. Can you tell us a bit about this organization?

Pat: The International Dental Hygienists' Federation has a relatively short history, having been established four years ago in Oslo, Norway. At the time I was the founding Vice-President and, at our meeting in 1989 in Ottawa, took office as President. While the Federation itself is relatively new, it is the result of many years of international co-operation and effort. It represents the only organization with a membership of hygienists

world-wide. At this time, we have 13 member countries and are considering several applications.

PROBE: You recently offered memberships available on an individual basis. Is that correct? Where can we get further information?

Pat: Yes. It's a relatively new category. Membership for individual dental hygienists, as well as categories for affiliate and corporate memberships, are available. You may request information from the Secretary-Treasurer, Mrs. Jo Gardner, P.O. Box 151, Madeira Park, British Columbia, V0N 2H0.

PROBE: Since you've been involved with dental hygiene, at the global level, could you make a statement about it?

Pat: The thing that has impressed me the most, having had the opportunity to work with colleagues world-wide, is the outstanding capability of the women, and I say women because, in all cases, it's been women that I've worked with internationally. It's exciting to hear about developments in other countries and to realize that, regardless of numbers, level of professional organization, or culture, the similarities in our issues and goals vastly outweigh any differences. Working at the international, as opposed to the national, level allows me to get a different perspective on the dental hygiene profession and the significant contribution that it is making to oral health. While the challenges are great, one realizes that the strengths, resources and contributions we can offer as a professional group have yet to be fully realized.

PROBE: You certainly have a broad perspective on the profession, right from the needs and wants of the average Canadian hygienist to the profession on a world-wide scale. What can you say about us Pat? What does our future hold?

Pat: I believe that to a large extent, the future is what dental hygienists

want to make it, both on an individual basis and as a professional group. Recent population-based changes in demography (the population's escalating age) and changes in disease prevalence and incidence, the anticipated growth in the need and demand for periodontal services, and the increased emphasis on cost containment suggest that dental hygienists will play an even greater role in the delivery of services. Inherent in cost containment is the concept of technical efficiency; that is providing services by the least costly personnel commensurate with accepted standards. The cost-effectiveness of using dental hygienists has been clearly demonstrated. The other inherent concept is the development of public-interest-based health goals; related to this is the shift to community-based settings to improve access to services. Dental hygienists are already taking a more proactive stance in preparing for the future, as demonstrated by their interest in assuming responsibility for self-regulation and encouraging changes in supervision to permit this increased access to services. I don't believe that dental hygienists need to be supervised. Instead, practice standards should be implemented to ensure the quality of service to clients.

The education and regulation of health professionals, including dental hygienists, should reflect practice standards and assure the competence of the practitioners to maintain those standards. The question then becomes, not the supervision of one service provider by another, but rather the assurance of a high quality of service for the client groups.

PROBE: So things are really changing for dental hygiene.

Pat: Yes. I believe so. I've seen a lot of changes over the years that I've been involved. The process has been evolutionary; certainly not revolutionary. However, that

should be reassuring for everyone. There will always be the traditional collaborative practice mode for those who are comfortable with the way they now work. However, I do see new roles for dental hygienists and the increasing expectation that dental hygienists, practising in both the traditional and non-traditional modes, will assume more responsibility for the process of dental hygiene care. This process is a new concept that involves complete assessment, planning, implementation, and evaluation of dental hygiene services. In addition to the clinical practitioner role, dental hygienists, increasingly, will assume roles in administration, research, and consulting. A broader range of practice settings will continue to open for dental hygienists due to the shifts in the population: for example, a greater proportion of the "new elderly" will expect to receive services, regardless of whether they can access the private dental office. In order to prepare for this changing future, dental hygienists are assuming more responsibility for self-regulation and continuing competence in their work, consistent with accepted practice standards. Basic and continuing education will continue to evolve, providing practitioners with a knowledge base in the art and science of dental hygiene, the skills to undertake a variety of work roles, and the confidence to pursue alternative practice modes and settings.

PROBE: Thank you, Dr. Johnson, for your provocative analysis of the past, and vision of the future.



CDHA Guide to Submission of Manuscripts

Manuscript:

All manuscripts submitted for consideration for publication should be typed on standard (8 1/2 X 11) paper, double-spaced, with a margin allowance of at least one inch. Three copies should be sent to the editor, and the manuscript must not be submitted to another publication while under review. A title page should be included stating the title of the paper and the author's full name, degree, and position.

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Illustrations must be clearly defined and suitable for reproduction on a reduced scale. Each picture should include a legend and should be marked in numerical order. Graphs and drawings should be drawn in Indian ink on white paper. Photographs must be glossy prints.

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The preferred length of a text is 8-10 typed pages or 2,000 words including references. Space for illustrations should be considered in the length.

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References should be lined up numerically. References to journal articles should be made as follows: last name of author followed by initials; title of article with only the initial letter of first word capitalized; full journal name followed by volume, number, first and last pages of article to which you refer, and year.

Example:

Bell, G. Role of the dental hygienist in restorative dentistry. *Dental Health* 40: 139-141, 1973.

References to books should be made as follows: last name of author followed by initials, title of book with initial letters of all words, except connecting words, capitalized; publisher; city of publication, year of publication; page or pages to which you refer.

Example:

Guthrie, H.A. *Introductory Nutrition*. The G.V. Mosby Co., St. Louis, 1975: 153-156.

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Manuscripts will be acknowledged upon receipt. Authors will be notified of acceptance of their paper before publication. Rejected manuscripts will be returned.

ACHD Recommendations aux auteurs

Textes:

Les textes doivent être remis dactylographiés à double interligne, sur paper 8 1/2 X 11"; toutes les marges doivent être d'au moins un pouce. Les auteurs doivent remettre un original et deux copies et le texte doit être soumis uniquement à l'Hygieniste Dentaire du Canada. Une page frontispice doit inclure le titre du texte, les noms, qualités et titres et postes du (des) auteur(s).

Illustrations:

Les illustrations doivent être claires afin que leur reproduction sur échelle réduite soit possible. Chaque illustration doit être accompagnée d'une légende dactylographiée. Les graphiques et schémas doivent être dessinés convenablement, à l'encre de Chine sur papier blanc. Les photographies doivent être des épreuves glacées; elles doivent être numérotées dans l'ordre.

Longueur de texte:

La longueur des textes devrait être de 8 à 10 pages dactylographiées ou de 2000 mots y compris les références. Les espaces pris par les illustrations doivent être inclus dans ces limites.

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Les sous-titres sont recommandés afin de faciliter la lecture du texte.

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Exemple:

Zangwill, O.L. Le problème de l'apraxie idéatoire. *Revue Neurologique*, 102: 595-603, 1960.

Les références à des livres doivent être faites de la façon suivante: nom du (des) auteur(s) initiale(s); titre du livre (dans les titres en langue anglaise, tous les mots sauf les mots d'accompagnement doivent commencer par une majuscule); éditeur; ville où est située la maison d'édition; année de publication, pages (s'il y a lieu).

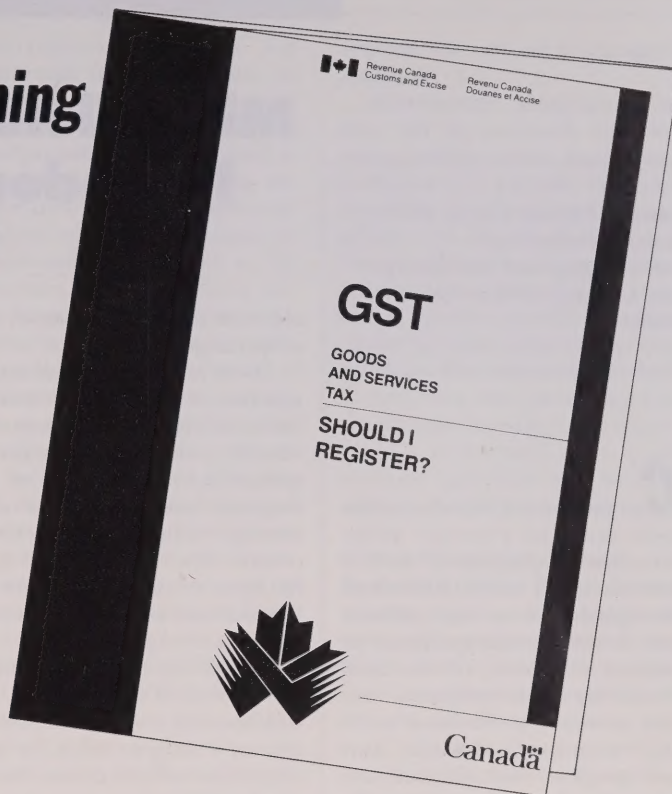
Exemple:

Guthrie, H.A. *Introductory Nutrition*. The G.V. Mosby Co., St. Louis, 1975: 153-156.

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Microbiological Tests for Periodontal Disease

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Associate Professor of
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Buffalo

Certain forms of periodontal disease such as chronic adult periodontitis progress at such a slow rate that it is often difficult to distinguish sites or even patients with "active" disease compared to patients with many of the same clinical signs and symptoms who have quiescent periodontal pockets. Standard clinical and radiographic methods lack the sensitivity to detect active periodontitis until the lesions have progressed to a significant level of attachment loss or alveolar bone loss. These methods are usually a measure of past periodontal disease rather than current disease. Accordingly, a goal for many periodontal scientists has been the development of tests which can be used in the dental office — tests which are relatively inexpensive, rapid, and which have high levels of sensitivity and specificity.

One type of device which is currently under development for use in the dental office is a microbiological test to detect the species of subgingival bacterial important in periodontitis. For example, *Actinobacillus actinomycetemcomitans*, *Bacteroides intermedius*, *Porphyromonas gingivalis* and several other subgingival organisms have been associated with discrete types of periodontal disease. Therefore, the use of microbiological tests to detect these bacterial is a reason-

able and, possibly, a necessary part of dental practice.

There are a number of important factors to consider in treating bacterial infections. First, one must identify the infecting micro-organism(s) in order to arrive at a diagnosis based on the microbial etiology rather than on clinical criteria. After the infectious agent has been identified, treatment can be instituted in order to eliminate this micro-organism. This may necessitate the use of an antibiotic or mechanical debridement. Not only the infecting bacteria, but the infected patient must be considered in order to choose the optimal anti-infective drug therapy. These include considerations of allergy and other possible adverse reactions to the chemotherapeutic agents contemplated.

Microbiological tests are not necessary or even desirable for all patients. The decision to use a microbiological test, as the decision to use any other test, such as radiographs or serological urinalysis, is based on certain guidelines. Indications for the use of microbiological assays in periodontal disease include:

1. **Diagnosis to determine the causative agent.** Clinical studies show that most adult periodontitis patients can be successfully treated by mechanical debridement or topical antimicrobials. There are certain patients, however, with refractory periodontitis, localized juvenile periodontitis, generalized juvenile periodontitis, rapidly progressing adult periodontitis or pre-pubertal periodontitis who

present with a clinically distinct group of signs and symptoms. Microbiological assays are indicated in these patients in addition to the usual clinical and radiographic examinations. The underlying use for microbiological tests is that the detection of certain subgingival pathogens may indicate the use of systemic antibiotics or periodontal surgery, which might otherwise not be used: for example, eradication of *A. actinomycetemcomitans* often requires a combination of mechanical debridement, surgery and systemic antibiotic agents.

2. **To determine "active" sites.** Clinical examinations show loss of periodontal attachments and alveolar bone which may not necessarily indicate active disease and current infection but rather, reflects what has happened in the past. If a microbial pathogen is detected in sufficient numbers by rapid microbiological assays, the disease may be active in those specific sites or those sites may be "at risk" for loss of attachment at some time in the future.

3. **Treatment planning for new patients.** In this case, microbiologic tests may be used to determine the causative agent which may, in turn, determine the best mode of treatment: for example, in localized juvenile periodontitis, effective eradication of *A. actinomycetemcomitans* requires a combination of mechanical debridement and systemic antibiotic agents. By contrast, the best treatment of adult periodontitis may be

thorough scaling and root planing alone, or mechanical debridement of the root surface together with a topical antimicrobial agent.

4. Treatment of "refractory" patients. Patients with refractory or recurrent periodontitis have received extensive treatment, often surgery, and sometimes multiple courses of systemic antibiotics and have failed to respond. For these types of patients, rather than using rapid office tests which are aimed at detecting one or more of a small group of pathogens, bacterial culture and antibiotic susceptibility testing will often be necessary to identify the often "unusual" micro-organisms likely to be responsible for the continuing periodontal destruction.

5. To monitor treatment. In addition to clinical indicators such as reductions in probing attachment level and decreases in the number of bleeding points, the treatment of an infection such as that occurring in periodontitis, may require the use of microbiological assays after diagnosis in order to determine if the treatment is working. Elimination of specific periodontal pathogens, such as *A. actinomycetemcomitans* and the black-pigmented *Bacteroides*, is a convenient, meaningful endpoint for therapy.

6. To select an appropriate recall interval. After periodontal treatment has been completed, microbiological tests can be used to detect re-infection by periodontal pathogens as an additional parameter in determining an individual patient's optimum recall interval. If a patient is found to become infected with high levels of periodontal pathogens such as *A. actinomycetemcomitans*, more frequent recalls may be needed. Conversely, if a patient does not exhibit re-infection over several recall visits, longer recall intervals may be appropriate.

Microbiological tests for periodontal disease can also be used to examine groups of individuals in epidemiologic studies of the prevalence of pathogens, in longitudinal studies to assess the importance of various microorganisms in the progression of periodontal disease, and in the prevention of periodontitis in persons "at risk" for, either the initial onset of periodontal disease, or for recurrent disease. Microbiological monitoring of high risk subjects, such as the siblings of localized juvenile periodontitis patients, may be useful in preventing disease. A positive microbiological test may indicate the need for antibiotic therapy to eliminate periodontal pathogens prior to signs of probing attachment loss.

A key step in the analysis of dental plaque is sampling. The goal is a patient sample which is representative of the area in question. Subgingival dental plaque can be sampled using sterile endodontic paper points. An infected site is selected, isolated with cotton rolls to prevent contamination of the sample with bacteria in saliva and the teeth are air dried. Supragingival plaque is removed using either a sterile cotton pellet or a sterile scaler or curette. The instrument is moved in a coronal direction to avoid pushing supragingival plaque into the subgingival space. Three fine sterile paper points are then sequentially inserted to the depth of the gingival sulcus/periodontal pocket, using firm pressure. If an interproximal site is being sampled, the paper points are directed in such a way so that the tip of the paper points come to rest in the deepest location directly under the contact area. Ten seconds from the time the last paper point is placed, they are all removed together and then placed into appropriate transport media for shipment to the laboratory. Samples intended for analysis using DNA probes do not

require the use of a transport medium.

Alternatively, subgingival plaque can be routinely sampled using a sterile curette. Again, after isolating the sample site and removing the supragingival dental plaque as described above, a curette is placed to the depth of the gingival sulcus/periodontal pocket and moved coronally with firm lateral pressure against the root surface. The material is then shaken from the curette tip into the transport medium, the instrument is re-sterilized as in a salt sterilizer, and it can then be used again to sample the next site.

Clinical Microbiological Assays

Bacterial Culture. The definitive microbiological assay is bacterial culture. If a species can be cultured from a lesion, there can be little doubt that that micro-organism infects the site. For this reason, bacterial culture can be considered to be the "gold standard" against which other methods are compared. Bacterial culture also affords the opportunity to determine the antibiotic susceptibility of a patient sample, and hence, which antibiotic is most useful in treating the patient. Bacterial culture is, however, time-consuming, expensive, and it requires considerable technical expertise. To culture *Porphyromonas gingivalis* from a patient sample, approximately one week is required for the initial or "primary" culture. The agar plates must then be examined and the black-pigmenting colonies must be subcultured. These subcultures must then incubate anaerobically for five to seven days and may often require re-streaking in order to achieve a pure culture. This pure culture is then inoculated into broth medium and subjected to several biochemical tests and analysis of metabolic acid end products by gas-liquid chromatography. The definitive identification of a single colony of

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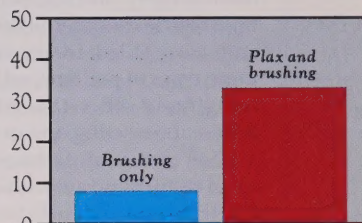
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References: 1. Emling RC, Yankell SL. Comp Contrin Ed 1985;6:637-645. 2. Independent Market Survey, April 1989.

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P. gingivalis can require, therefore, three weeks or more from the time of initial sampling. All of the steps in the culture are performed by highly-trained laboratory personnel and the entire procedure is relatively expensive. There are also technical difficulties associated with the anaerobic culture of patient plaque samples; including the loss of bacterial viability during transport of the patient sample from the dental office to the laboratory, especially in samples shipped to a distant laboratory.

Phase Contrast or Darkfield Microscopy. In these assays, a sample of the patient's plaque is taken and examined using a microscope especially suited for examining living bacterial cells. These microscopic assays are often targeted towards detecting certain indicator micro-organisms such as motile rods and spirochetes. The presence of these indicator micro-organisms in a patient plaque sample points to the presence of pathogenic microflora in the sample and the need for therapeutic intervention aimed at eliminating the microbial pathogens. Clearly, phase contrast or darkfield microscopy can detect motile rods and spirochetes and these species are often associated with periodontal disease, particularly chronic adult periodontitis, but they are also found at high levels in gingivitis, and do not readily allow the differentiation between the two forms of periodontal disease. Furthermore, phase contrast or darkfield microscopy does not give information as regards particular bacterial species. Neither light microscopy nor phase contrast microscopy is able to give information beyond the size, shape, and motility of the bacterial species in patient plaque samples. There are, for example, at least three genera of spirochetal-shaped micro-organisms and a large number of defined and un-

defined species within each genera. Microbiological assays should be used which identify bacterial species rather than bacterial morphotypes.

Antibody-based Assays. While bacterial culture is the "gold standard", non-culture techniques of microbiological analysis can be very useful in identifying the micro-organisms present in a patient sample. These non-culture techniques include immunological methods based on specific antibodies, DNA probes, or assays for specific bacterial enzymes. Each of these methods can provide rapid identification of both cariogenic and periodontopathic micro-organisms and they can be used to screen large numbers of subjects. In clinical practice, they can be used to more thoroughly characterize individual patients - to diagnose disease, to monitor the course of therapy, to detect previously treated subjects who have become re-infected, and to distinguish disease from carrier states.

All rapid tests are generally developed in comparison to bacterial culture, which serves as the gold standard. It should, however, be remembered that bacterial culture does not exhibit 100% sensitivity or specificity. Bacterial culture, especially for anaerobic micro-organisms such as *P. gingivalis*, may yield significant numbers of false negative results, especially when the organisms are present in small numbers. False positive results, although less likely, can also occur due to misidentification or cross-contamination. Hence, correlations of rapid tests with culture methods as gold standard must be interpreted with caution.

Immunological techniques such as immunofluorescent microscopy rely on antigen-antibody reactions and are often more likely to detect specific micro-organisms in clinical

samples than bacterial culture since these methods do not require cultivable (viable) bacterial cells. In addition to detecting the bacteria themselves, antibody-based assays can also be used to detect bacterial virulence factors such as toxins. In contrast to bacterial culture, rapid methods cannot currently be used to determine antibiotic susceptibility or resistance.

Among immunological methods, there are several which can be utilized for the detection of microbial pathogens including immunofluorescence microscopy, latex and other particle agglutination assays, and enzyme-linked immunosorbent assays. Each of these methods utilize polyclonal antisera or monoclonal antibodies specific for bacterial antigens or for microbial virulence factors and each method offers certain advantages and disadvantages. Latex agglutination, for example, is a rapid method requiring little equipment or technical expertise and which is useful in the examination of individual patient samples in a clinical setting. Similarly, membrane-based techniques such as ELISA, which are configured for in-office use, have great potential since they are sensitive, specific and easy to use and interpret.

All immunological methods require serological reagents, either polyclonal antisera or monoclonal antibodies, which react only with the "target" bacterial species and not with the myriad of other bacteria which may be present in the same patient sample. The specificity of these reagents lies in the inherent specificity of antigen-antibody reactions. These serological reagents can be utilized singly, or in combination, in various immunological assays. Monoclonal antibodies, unlike polyclonal antisera, can be obtained in potentially unlimited amounts making it possible to standardize immunological tests. Presently, most

kits for home or office detection of bacterial pathogens are antibody-based, using agglutination or membrane techniques.

Immunofluorescence microscopy. Immunofluorescence microscopy, for the detection of periodontal pathogens, particularly *Actinobacillus actinomycetemcomitans* and *Porphyromonas gingivalis*, has been used for the past several years in the routine clinical detection of these species in patient plaque samples. Using this method, patient samples are transported to the laboratory and placed on glass slides. The patient sample is then reacted with species-specific antisera or monoclonal antibody which is labelled with a fluorescent compound. The slides are then examined using a fluorescence microscope and the presence of the target bacteria in the patient sample can be seen as a green fluorescing bacterial cell.

ELISA. Enzyme-linked immunosorbent assays (ELISA) for bacterial species involves binding the species-specific serologic reagent to the wells of polystyrene plates. The bacterial plaque sample is dispersed in a buffer with the addition of a detergent and an aliquot of the bacterial suspension is added to the antibody-coated wells. Binding of the target micro-organisms to these wells can then be detected by the addition of a second antibody conjugated to an enzyme and the enzymatic substrate. Adaptation of this procedure to office tests has been successful for many bacterial, fungal and viral pathogens.

Latex Agglutination Assays. Latex agglutination assays have possibly the greatest potential for widespread use in the clinical detection of periodontal pathogens. These assays have long been used in both reference laboratories and clinics for the routine detection of a number of different

bacterial pathogens: for example, traditional culture of throat swabs from pharyngitis patients has been supplanted by latex agglutination assays for streptococcal species. These assays involve the use of latex beads coated with the species-specific antibody. When these beads come in contact with microbial cell surface antigens or antigen extracts, cross-linking occurs and visible clumps of beads are formed, usually within 2 to 5 minutes. Latex agglutination assays, however, suffer from low sensitivity and difficulty in interpretation of results. They are likely to be supplemented by membrane-based technologies.

DNA Probes. Techniques of molecular biology have been adapted to the diagnosis of infectious disease. There are currently available reference laboratory services which utilize DNA probe technology to detect certain bacterial species in patient plaque samples. The key to these assays is the use of a probe DNA — a piece of DNA which will hybridize specifically to the target species in a manner analogous to antibody-antigen reactions in serologic assays. Patient samples are sent to a reference laboratory where the DNA in the subgingival plaque bacteria is extracted and then bound to a filter. The probe DNA is applied and allowed to hybridize. If the target species is present in the patient sample, then hybridization of the probe DNA can be detected by autoradiography.

Enzyme assays. One factor in the pathogenesis of periodontitis is the production of various bacterial enzymes by the periodontal pathogens. These enzymes include collagenase and hyaluronidase which can destroy gingival connective tissue, acid and alkaline phosphatase, RNAase, and DNAase. Some of these enzymes are produced specifically by certain

periodontal pathogens: for example, collagenase is produced by *A. actinomycetemcomitans* and *P. gingivalis*. *P. gingivalis* also produces trypsin-like enzymes and a specific peptidase which may be useful markers in detection of this organism in plaque samples. Using these enzymatic markers as a key to the presence of these species, the corresponding bacteria can be detected in the patient sample by assaying for the specific enzyme. Toward this end, several methods are available to examine a patient sample for the presence of specific enzymes. A major drawback to the enzyme techniques is that they do not directly measure the organism, and often the enzymes detected are also produced by the host, especially during inflammation.

Presently available procedures for the culture, immunologic detection, and DNA probe assessment of *A. actinomycetemcomitans*, *B. intermedius*, and *P. gingivalis* are useful in dental practice. Future improvements will enable clinicians to perform these tests in their offices, and will make clinical microbiology an integral part of dentistry for the benefit of both the patient and the dental profession.

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On the Cover...

Blood agar culture of a subgingival plaque sample from a deep periodontal pocket illustrating a high percentage of black pigmented *Bacteroides*.

Photograph courtesy of:

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The Use of Accurate Gingival Indices in Current Periodontal Literature

ABSTRACT

A number of studies have shown that bleeding on probing is the first clinical indication of gingival inflammation, preceding that of color change. It appears, though, that a number of clinical periodontal studies measure gingival inflammation with an index that notes color change as the primary detection. The purpose of this study was to determine the proportion of articles that use a "bleeding first" gingival index and a "color change first" gingival index.

Articles from two highly reputable scientific journals in clinical periodontology (*Journal of Periodontology* and *Journal of Clinical Periodontology*) were surveyed. Two recent years (1986-1987) were chosen, in addition to two years at the end of the 1970's; a period in which gingival indices were studied in relation to sequence of bleeding on probing and color change. A surveyed article was included in this study if: (1) it utilized a gingival index involving at least bleeding on probing and color change, and/or, (2) it assessed gingival

inflammation using bleeding on provocation, color changes, edema, swelling or other tissue changes.

Of the 749 articles surveyed, 448 met the criteria for inclusion in this study. One hundred seventy-five (39%) used the types of indices in question while 273 (61%) measured gingival inflammation using independent clinical features. Of the 175 index articles, 167 (95%) used an index in which color change preceded bleeding as the first clinically detectable sign of gingival inflammation while 8 (5%) used one in which bleeding preceded color change. No statistically significant difference was found in the proportion of articles using these indices either: (1) between the two sets of years for both journals or (2) between the two journals for both sets of years. It was concluded that researchers in clinical periodontics have been slow in adopting the use of the more accurate "bleeding first" indices.

INTRODUCTION

A number of clinical features may be utilized to measure the degree of marginal gingival inflammation. These features include changes in gingival color or contour, edema, swelling, hypertrophy and bleeding on provocation. Over the years gingival indices have been devised using changes in these clinical features as criteria. Some indices use single clinical features such as bleeding,¹⁻³ color³, or hypertrophy.³ Other indices use two or more of these clinical features as criteria in their index.⁴⁻¹¹ Loe & Silness (1963) developed the Gingival Index (G.I.) which includes changes in gingival color, edema, glazing, and

bleeding on provocation as features to be assessed.⁵ The criteria for the G.I. are as follows:

- 0 = Absence of inflammation,
- 1 = Mild inflammation – slight change in color and little change in texture.
- 2 = Moderate inflammation – moderate glazing, redness, edema, and hypertrophy. Bleeding on pressure.
- 3 = Severe inflammation – marked redness and hypertrophy. Tendency to spontaneous bleeding. Ulceration.

Subsequently, Loe (1967) substituted "bleeding on probing" for "bleeding on pressure" in this index.⁶

Mühlemann & Son (1958) devised the Papillary-Marginal Index (P.M. Index) which utilized bleeding on probing, color change and gingival swelling as clinical features to be assessed.⁷ The index criteria are as follows:

- 0= Healthy appearance with no bleeding on probing.
- 1= Bleeding on probing with no color change or swelling.
- 2= Bleeding on probing with color change but no swelling.
- 3= Bleeding on probing with color change and swelling.

Though these indices (G.I. & P.M. Index) assess similar clinical features, they differ with respect to what is considered as the first clinical sign of gingival inflammation, bleeding or gingival color change. Mühlemann & Son (1971)⁸ and Meitner et al. (1979)¹² studied gingival inflammation with respect to the sequence in which these two features occur and concluded that bleeding on probing was the first

clinically detectable sign of inflammation, preceding gingival color change.

Nevertheless, it is interesting to note that a number of scientific articles still use gingival indices in which color change is the primary detection. The purpose of this study was to determine: 1) the proportion of current clinical periodontal studies which use a "bleeding first" index and a "color change first" index; 2) if there is a difference in the proportion used by different periodontal journals; and 3) if there has been a change over time with respect to the proportion of the two types of indices used.

Materials & Methods

Articles were surveyed from the Journal of Periodontology and the Journal of Clinical Periodontology for the years 1979-1980 and 1986-1987. An article was selected for this study if, in assessing the degree of gingival inflammation, the authors used an index in which at least both bleeding on provocation and gingival color changes were included in the criteria. Studies were also included if gingival inflammation was assessed by the use of these and other clinical features, independent of an index. Other clinical features included swelling, edema, hypertrophy, total area of tissue inflamed and tissue contour.

Some articles assessed the degree of gingival inflammation by using the terms "gingivitis" or "periodontitis" or "periodontal disease". For the purposes of this study these articles were categorized under tissue features alone and not bleeding and tissue features. Mucogingival changes (i.e. recession, narrow zone of attached gingiva, frenal pull) were not considered a means of measuring gingival inflammation.

Two authors (J.S., L.P.) reviewed the articles together. If ambiguity existed with respect to the criteria described, the two investigators discussed the various points of view and a decision was then made as to which category to assign the article.

Results

Of the 740 articles surveyed, 448 (59.8%) met the criteria for inclusion in this study. One hundred seventy-five (39%) of these articles utilized a gingival index in which at least both bleeding and color change were criteria, while the remaining 273 (61%) used independent clinical features (Table 1). Of those using the former type of index, 167 (95%) used one in which color change was the first sign of gingival inflammation, while 8 (5%) used one in which bleeding was the first sign. The distribution of articles accord-

ing to the two types of indices, within the two sets of years, and by journal, is viewed in Table 2. A chi square test indicated that there was no significant difference in the proportion of articles using the two types of indices: 1) between the two sets of years for both journals ($\chi^2 = 0.17$; $df = 1$; $p \geq 0.05$), or 2) between the two journals for both sets of years ($s^2 = 0.073$; $df = 1$; $p \geq 0.05$). Forty five percent of the studies using a gingival index, used it as the sole means of measuring inflammation, while 55% used bleeding and/or tissue feature changes in addition to an index (Table 3). Of those studies which utilized clinical features independent of an index system, 11% used bleeding alone, 65% used tissue features alone, and 24% used a combination of both (Table 4).

Discussion

Hazen (1974) reported on the use of indices that measure gingival inflammation in studies of periodontal disease.¹³ He categorized indices in three groups: descriptive, dichotomous, and numerical ranking. The numerical ranking system was considered to lend itself best to rating the severity of the disease process. Most of the gingival indices used in periodontal studies fall into this latter category.¹⁻¹¹ A number of these indices use multiple clinical features

Table 1 Distribution of Articles Surveyed and those included in this Study.

Journal	Years	Surveyed	With Index	Number included	
				Tissue Features Only	Total
J. Clin Perio	1979-80	95	35	34	59
	1968-87	241	62	101	163
J. Perio	1979-80	198	40	62	102
	1986-87	215	38	86	124
TOTAL		749	175(39%)	273(61%)	448(100%)

in their criteria. Nevertheless, discrepancies exist with respect to the order in which these features appear as the disease progresses, particularly bleeding on provocation and gingival color changes;^{4,11} for example, the G.I. lists color change as the first detectable sign of inflammation; while the P.M. Index lists bleeding on provocation as the first clinical sign, preceding color change. Studies have been carried out which show bleeding on probing to be the first clinically detectable sign of gingival inflammation, preceding color change.^{8,12,14}

Clinically, bleeding on provocation appears before gingival color changes, due to the nature of the histopathologic process that occurs in the gingival tissues in response to the accumulation of dental plaque. Greenstein et al. (1981) assessed the histomorphometric character of gingival tissue from sites with, and without,

visual signs of inflammation, and which were either positive or negative for bleeding on probing.¹⁵ From their assessment, they concluded visual signs of inflammation may represent an extension of long-standing sulcular inflammation; a cellular infiltrate large enough to extend across the entire width of the dento-gingival unit to oral epithelium. Incipient sulcular inflammation, on the other hand, may not extend far enough laterally across the gingival unit to produce clinically visible changes, and may only be recognized by bleeding on probing.

The value of changes in clinical features as an aid in determining *current* disease activity, or predicting periods of *future* tissue destruction, is under active investigation. This is especially true of bleeding on probing. Lang et al. (1986) evaluated the frequency of bleeding on probing as a diagnostic tool

in the detection of periodontal disease activity.¹⁶ Sites in periodontal maintenance patients were assessed for a period of two years. Periodontal breakdown of 2mm and bleeding on probing demonstrated only a 6% positive predictive value, it had a 98% negative predictive value for periodontal breakdown. It was concluded that *continuous absence of bleeding on probing is a reliable predictor of periodontal health.*

Gingival indices have been used for many years as a means to measure the severity of marginal inflammation. A number of studies have shown that one of the first signs of the gingival inflammatory process is bleeding on probing.^{8,12,14} This study looked at the impact these findings have had on the frequency of use of "bleeding first" indices and "color changes first" indices.

Table 2 The Distribution of Articles With the Two Types of Indices According to the Two Sets of Years and the Two Journals

Journals	Bleeding First			Color Change First		
	1979-80	1986-87	Total	1979-80	1986-87	Total
J. Clin Perio	2	3	5(5%)	33	59	92(95%)
J. Perio	1	2	3(4%)	39	36	75(96%)
TOTAL	3(4%)	5(5%)		72(96%)	95(95%)	

Table 3 Distribution of Articles using Indices With and Without other Independent Features.

With Index Alone or With Other Features				
Journal	Years	Index Only	Index Plus Other Features	Total
J. Clin Perio	1979-80	21	14	35
	1986-87	21	41	62
J. Perio	1979-80	21	19	40
	1986-87	15	23	38
TOTAL		78(45%)	97(55%)	175(100%)

The Journal of Periodontology and the Journal of Clinical Periodontology were surveyed because they are currently two of the most widely respected scientific journals published on the subject of clinical periodontics. Two recent years, 1986-1987, were compared with two years at the end of the 1970's, 1979-1980. This latter time period was selected because work during this time^{12,13} confirmed earlier results,⁸ which showed bleeding on probing to be the first clinically detectable sign of gingival inflammation.

Of the 448 articles included in this study, almost 40% used a gingival index involving bleeding and/or color change. Of these, 5% used a "bleeding first" index, while 95% used a "color change first" index. It is interesting to note that a large proportion of the articles in question used a gingival index which has been shown to be insensitive at detecting the earliest signs of gingival inflammation. The use of such indices, most noticeably the G.I., is probably due primarily to the historical nature of this particular index. The results of this study indicate researchers in clinical periodontics have been slow in adopting the more accurate "bleeding first" gingival indices. Nevertheless, as the science of clinical periodontics progresses, it will become necessary to use ac-

curate means of measurements if proper interpretation of the results are to be made.

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Table 4 Distribution of Articles using Independent Clinical Features and No Gingival Index

Journal	Years	Independent Features Alone			Total
		Bleeding	Tissue Features	Bleeding & Tissue Features	
J. Clin Perio	1979-80	3	13	8	24
	1968-87	19	45	37	101
J. Perio	1979-80	0	55	7	62
	1986-87	7	63	16	86
TOTAL		29(11%)	176(65%)	68(24%)	273(100%)



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The Subgingival Microflora as a Determinant in Periodontal Disease Treatment Planning

Introduction

Probing pocket depth, gingival inflammation, supragingival plaque, alveolar bone topography and tooth anatomy are classical decision variables in assessing the need for periodontal treatment and adjunctive antimicrobial chemotherapy. However, despite comprehensive therapy guided by these parameters, some patients continue to exhibit periodontal attachment loss.¹ Shortcomings of present clinical measurements include inability to detect current destructive disease activity², and poor ability to assess treatment efficacy and predict long-term response to surgical or non-surgical periodontal therapy.³ Obviously, clinicians need additional diagnostic tools in treatment planning and monitoring. Since periodontitis may be due to specific bacterial infection microbiological determination of the infecting microflora may provide improved risk assessment and "individualization" of periodontal therapy.

In this paper, the efficacy of various periodontitis treatment procedures will be related to the composition of the subgingival microflora. Proposals on appropriate antimicrobial therapy with selected periodontal infections will also be provided.

Microbiology of Progressive Periodontitis

A limited number of oral microorganisms seem to be responsible for a large part of progressing periodontitis in adults and adolescents (Table 1). Recent studies also

have found non-oral bacteria and yeasts in the subgingival flora of adult periodontitis lesions not responding to conventional periodontal therapy (Table 2). The suspected periodontopathic organisms show a wide array of colonization properties, virulence factors, and antimicrobial sensitivity patterns.¹⁸ Considering the great variety of subgingival infections, it is not surprising that some periodontitis lesions are not resolved by conventional mechanical therapy alone.

Efficacy of Mechanical Periodontal Therapy

Many subgingival organisms are markedly reduced leading to significant clinical improvements (Table 3).^{19,20} In contrast, the major periodontal pathogen, *Actinobacillus actinomycetemcomitans*, resists mechanical removal, with or without surgical access,^{4,20-22} presumably because of its ability to colonize sub-epithelial gingival tissues and other oral sites. For similar reasons, enteric rods/pseudomonads, staphylococci and yeasts and may be difficult to mechanically eliminate from the subgingival flora.¹⁴⁻¹⁷ Additionally, *Peptostreptococcus micros*, *Bacteroides intermedius*, *Bacteroides forsythus* may evade removal because of colonization of crevicular epithelial cells.²³ Microbiologically, thorough closed scaling/root planing or open flap surgical debridement appear to produce similar long-term results^[24]. If these pathogens persist after therapy, patients may be at risk of experiencing further destructive

periodontal disease.^{4,6-8,10,12-17,19-22}

Efficacy of Local Antimicrobial Chemotherapy

Subgingival irrigation with antiseptic agents (i.e., chlorhexidine, iodine) or placement of slow-release tetracycline fibers in conjunction with mechanical debridement may enhance suppression of some periodontal organisms (Table 3).²⁵ However, topical antimicrobials are generally ineffective in reducing periodontal *A. actinomycetemcomitans* and may even result in higher subgingival counts.^{4,26} *P. micros*, enteric rods/pseudomonads and staphylococci also appear relatively unresponsive to locally-administered antimicrobial agents.²⁷ The ineffectiveness of topical antimicrobial therapy is probably due to inability of the agents to reach the target microorganisms, similarly as discussed above, for mechanical therapy.

Efficacy of Systemic Antimicrobial Chemotherapy

Systemic antimicrobial therapy is often required for eradication of a specific bacterial species from the subgingival floras (Table 3). It is important to note that systemic antimicrobials cannot act as a substitute for debridement and should not be employed for mere nonspecific plaque control.^{28,29}

A. actinomycetemcomitans, *Bacteroides gingivalis*, *B. intermedius*, *P. micros* and *Wolinella recta* may be eliminated by a combination therapy of systemic metronidazole and Augmentin (amoxicillin-clavulanic acid) 250 mg TID of each for 8 days) (Table 3).²⁸ Enteric rods/pseudomonads and staphylococci may be removed from subgingival sites with systemic metronidazole plus ciprofloxacin (500 mg BID of each for 8 days).^{16,17,28} Combination therapy compared with single drug use may provide a greater and overlap-

ping spectrum of antimicrobial activity. This reduces the risk of developing resistant strains and enables lower doses of the medications to be administered over short time periods. Lower drug doses have the benefit of reducing possible side-effects for patients. Tetra-cyclines, which are bacteriostatic agents, should not be used in combination therapies. Single drug use and other systemic antimicrobials may be considered, based on individual patient factors and in vitro sensitivity of the targeted pathogens.

It is essential to carefully review the patient's medical status prior to prescription of systemic antimicrobial therapy.

Microbiological Diagnostics in Periodontics

Since conventional periodontal therapy may not adequately control all periodontal pathogens, necessitating the use of systemic antimicrobials, the composition of the periodontal microflora must be considered in therapeutic decision-making.

With progressing periodontitis, microbiological testing is best employed to identify the pathogenic organism(s) and their *in vitro* antimicrobial sensitivity. Ideally, a comprehensive microbiological analysis should be carried out; examining for both traditional periodontal pathogens, as well as for enteric rods/pseudomonads, staphylococci, yeasts and other unusual periodontal species. With periodontal health, gingivitis or non-progressing periodontitis, microbial testing and systemic antimicrobial therapy is usually not indicated.

Several commercial reference laboratories are available in North America and Scandinavia to perform microbiological evaluation.³⁰

Anti-Infective Periodontitis Therapy

The first step in the treatment of active periodontitis is thorough

Table 1 Major suspected pathogens in progressing periodontitis

Localized Juvenile Periodontitis

Actinobacillus actinomycetemcomitans
Eikenella corrodens

Adult Periodontitis

Actinobacillus actinomycetemcomitans
Bacteroides gingivalis
Bacteroides intermedius
Bacteroides forsythus
Eikenella corrodens
Fusobacterium nucleatum
Fusobacterium nucleatum
Fusobacterium periodonticum
Peptostreptococcus micros
Selenomonas flueggei
Selenomonas noxia
Streptococcus intermedius
Treponema spp.
Wolinella recta

Data adapted from references 4-13.

Table 2 Unusual subgingival organisms in refractory adult periodontitis.

Enteric Rods/Pseudomonoda

Enterobacter cloacae
Enterobacter agglomerans
Klebsiella oxytoca
Klebsiella pneumoniae
Escherichia coli
Pseudomonas aeruginosa

Staphylococci

Staphylococcus aureus
Staphylococcus epidermidis

Yeasts

Candida albicans

Data adapted from references 14-17

mechanical root debridement (with or without surgical access), preferentially supplemented with a broad-spectrum topical antiseptic agent (i.e., chlorhexidine) to augment bacterial suppression.

At 1 to 2 months after completion of local chemo-mechanical therapy, a microbiological examination is required. Additional local debridement or systemic antimicrobial therapy is indicated with persisting high levels of periodontal pathogens.

At 1 to 2 months after systemic antimicrobial therapy, another microbiological test should be carried out to verify elimination of the targeted pathogen(s) and screen for the presence of possible super-infecting organisms. If pathogens

remain, poor patient compliance with drug doses or inadequate absorption and tissue distribution of the prescribed medication may be responsible.

After completion of this therapy, the patient should be placed on an individually-tailored, plaque-focused maintenance program. Proper plaque control can influence possible re-establishment of periodontal pathogens after termination of systemic antimicrobial therapies.³¹ Further microbiological testing may take place if clinical examinations suggest risk of recurrent disease.

Conclusions

The composition of the periodontal microflora affects the

efficacy of various periodontal treatment modalities, and determines the choice of systemic antimicrobial therapy. Management of periodontitis according to the specific microbial approach can lead to more predictable therapeutic outcomes, and may reduce the incidence of disease relapse.

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Table 3 Effectiveness of periodontal treatments on subgingival organisms

Microorganism	Treatment		
	Mechanical Debridement	Topical Antimicrobials**	First Choice of Systemic Anti microbial Agent (effectiveness)
<i>Actinobacillus actinomycetemcomitans</i>	-a	-	Augmentin/metronidazole (++)
<i>Bacteroides gingivalis</i>	++	±	Augmentin/metronidazole (++)
<i>Bacteroides intermedius</i>	±	±	Augmentin/metronidazole (++)
<i>Bacteroides forsythus</i>	±	±	Augmentin/metronidazole (++)
<i>Capnocytophaga spp.</i>	++	±	Augmentin/metronidazole (++)
<i>Eikenella corrodens</i>	++	±	Augmentin/metronidazole (++)
<i>Fusobacterium spp</i>	++	±	Augmentin/metronidazole (++)
<i>Peptostreptococcus micros</i>	±	-	Augmentin/metronidazole (++)
<i>Treponema spp.</i>	++	±	Augmentin/metronidazole (++)
<i>Wolinella recta</i>	±	±	Augmentin/metronidazole (++)
enteric roda/pseudomonads	-b	-	ciprofloxacin/metronidazole (++)
staphylococci	±	-	ciprofloxacin/metronidazole (++)
yeasts	±	±	ketoconazole (?)

a = effectiveness of treatment modalities;

b = effective with low levels of infection;

++ = target organisms generally eliminated;

± = target organism reduced, but not predictably eradicated;

- = target organisms minimally affected;

? = insufficient data available;

* = with or without surgical access;

** = monolithic tetracycline fibers or subgingival chlorhexidine/iodine irrigation.

Data adapted from references 4,6-8, 10, 12-17, 19-22 & authors' unpublished observations.

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Ruth Rees, PhD, Assistant Professor in the Faculty of Education, Queen's University, Kingston, Ontario, has completed a research project of considerable interest to the dental community, particularly pedodontists.

Dr. Rees has collected and assessed all available books on the topics of dental awareness and dental education, pertaining to children. She has prepared a bibliography of all the books she would recommend to dentists and dental educators, on these subjects. She has also prepared an extensive annotated bibliography that she says she would be pleased to share with any of the Journal's readers.

The purposes of children's books are many: to educate, to entertain, to inform, to demonstrate a caring and/or sharing between people (usually between child and adult or among children), to encourage reading and self-directed learning, to reinforce ideas through activities, to promote thinking and interpretation skills, to increase the awareness of children, to prepare children for the 'real' world, to convey norms and attitudes. Children's books about teeth and going to the dentist should fulfil the majority of the purposes listed above.

As an educator who has acquired (through marriage) an interest in dentistry and as a parent, I wanted to investigate exactly what children's books are available on the subject and, more importantly, what messages these books are conveying to our children. Consequently, this article is an attempt at answering these two questions.

Recommended Children's Books on Dental Awareness and Education

Parents and other educators in the health, dental, and teaching fields should also be interested in discovering what children are learning from books on the subjects of teeth.

Over several years, attempts have been made (and are still ongoing) to locate all children's books related to the topic of dentistry. First, the Children's Books in Print was referenced. Those publishers were contacted to supply the book and specify what others they had in their storerooms. Then, dental societies were contacted. A local pedodontic, and several dental health educators and dental hygienists added to the list. Next, a local bookstore became interested in the project and began its own search. Dental supply companies, as producers of dental education materials and distributors of children's books themselves, also provided some titles and materials. In total, over fifty books, reading and work/activity books, have been identified. These books were read and assessed by this author and at least one other person, either a fellow educator or a pedodontist, to attain some reliability of evaluations.

These books were reviewed according to the following (arbitrary) format:

- a) content information — type of book, theme, purpose; and
- b) evaluative comments — suitability for the intended group of children, noteworthy comments.

All the books which are recommended are described below: first the non-fiction/reference books,

then the one biography, next the story books, then the activity books, and last, books for the dental educator. The books are listed alphabetically by title. All categories are complete except for the final one, on books available for the dental health educator.

A NON-FICTION/REFERENCE BOOKS

1. *Careers in Dental Care* by Joyce K. Kessel. Minneapolis: Lerner Publications, 1984. For children in the junior grades (4-6).
2. *Charlie Choppers grow and grows* by Anne Goresht. Calgary, Alta: Wholesome Press, 1979. For children in the primary grades (1-3).
3. *David decides about thumbsucking* by Susan M. Heitler. Denver, CO: Reading Matters, 1985. (Also distributed by Semantodontics, Phoenix, Az. Intended for thumb-suckers and their parents.
4. *Dental Care* by Brian R. Ward. Toronto, Ont: Franklin Watts, 1986. For children in grades 4-10.
5. *Going to the Dentist* by Glem Husak. Sweickley, Pa: Hopewell Books Inc., 1983. An adult basic education book (reading level grade 2).
6. *How Many Teeth?* by Paul Showers. Markham, Ont: Beaverbooks, a division of Fitzhenry & Whiteside Ltd.,

1962. For preschoolers to children in grade 3.
7. *My Friend The Dentist* by Jane W. Watson, Robert J. Switzer, & J.C. Hirschberg. New York: Crown Publishers, 1987. Also distributed by Semantodontics, Phoenix, Az. For preschoolers to children in grade 3.
 8. *Smile! How To Cope With Braces* by Jeanne Betancourt. New York: Alfred A. Knopf, 1982. For children grade 5 and upwards.
 9. *So You're Getting Braces. A Guide To Orthodontics* by Dr. Alvin Silverstein & Virginia B. Silverstein. New York: J.B. Lippincott, 1978. For children in grade 7 and upwards (and for adults).
 10. *Teeth* by John Gaskin. Markham, Ont: A Franklin Watts book, Grolier Educational, 1984. For children in the primary grades (grades 1-3)
 11. *Teeth* by Sandra Halford. Loughborough, Eng: Ladybird Books, 1978. For children in the primary grades (grades 1-3).
 12. *The Story Of Your Mouth* by Dr. Alvin Silverstein & Virginia B. Silverstein. Toronto: General Publishing Co., 1984. For high school students (grades 9 and upwards).
 13. *The Tooth Survival Book*. Chicago, Ill: American Dental Association, 1977. For children in elementary school (grades 1-6).
 14. *Things To Know About Going To The Dentist* by Lisa Ann Marsoli. Agincourt, Ont: GHC/Silver Burdett, 1984. For children in junior grades (4-6).
 15. *Your Teeth* by Joan Iveson-Iveson. New York: The Bookright Press, 1985. For children in elementary school (grades 1-6).
- ## B. BIOGRAPHY
1. *Miss Dr. Lucy* by Carol M. Behrman. Washington, DC: Herald Publishing Co., 1985 For children in grades 5-8.
- ## C. STORY BOOKS
1. *A Trip to the Dentist* by Margot Linn. New York: Harper & Row Publishers, Inc. 1988. For pre-schoolers (ages 3-5)
 2. *Crocodile Teeth* by Majorie-Ann Watts. Tiptree, Colchester, Essex, Eng: Tiptree Book Services Ltd, 1986. For elementary school children (ages 5-12).
 3. *Danny and his Thumbby* Kathrun F. Ernst. Toronto, Ont: General Publishing, through Prentice-Hall, 1973.
 4. *Doctor de Soto* by William Steig. Toronto, Ont: Scholastic-Tab, 1982. For pre-schoolers to children in grade 3.
 5. *Going to the Dentist* by Anne Civardi. London, Eng: Highgate Press of Usborne Publishing Ltd., 1986. Part of the "First Experiences" series. For elementary school children (ages 5-12).
 6. *How Peter Molar looked for a Smith* by Jan and Stan Barton Bohonek. Cleveland, Oh: Adonis Studio, 1983. Intended for children in primary grades (1-3).
 7. *Jolly Molly Molar* by Barbara Fisher. New York: Ten Penny Players, 1978. For children in the primary grades (1-3).
 8. *Kariou and Baktus* by Thorbjorn Egner. London, Eng: Thomas Nelson & Sons Ltd., 1963. For children in primary grades (1-3).
 9. *Little Rabbit's Loose Tooth* by Lucy Bate. Toronto, Ont: Scholastic Inc., 1975. For children in the primary grades (1-3).
 10. *Michael and the Dentist* by Bernard Wolf. New York: Four Winds Press, a division of Scholastic Magazines, Inc., 1980. For children in primary grades (1-3).
 11. *My Dentist* by Harlow Rockwell. New York: Greenwillow Books, 1975. For pre-schoolers to children in grade 3.
 12. *Once Upon a Tooth* Montreal, Qué: Johnston and Johnson, 1984. For pre-school children and their parents.
 13. *Rat Teeth* by Patricia Reilly Giff. New York: A Yearling book, Dell Publishing Co., Inc, 1984. For children in the junior grades (4-6).
 14. *Say Cheese!* by Carolyn Dinan. London, Eng: Faber & Faber, 1985. For children from pre-school to grade 3.
 15. *So many things to see*. Pittsburgh, Pa: Family Communications, 1977. From the producers of Mister Rogers' Neighbourhood, the "Let's Talk About It Series". For children from pre-school to grade 6.
 16. *Taryn goes to the Dentist* by Jill Krementz. New York: Crown Publishers Inc., 1986. Also distributed by Semantodontics Inc., Phoenix, AZ. For pre-schoolers, aged 1-5.
 17. *Teach me about the Dentist* by Joe Berry. Sebastopol, Ca: Living Skills Press, 1986. Pre pre-school children.
 18. *The Bear's Toothache* by David McPail. Toronto, Ont: Little, Brown & Company, 1972. For elementary school children (ages 5-11).

19. *The Berenstain Bears and too much Junk Food* by Stand and Jan Berenstain. Toronto, Ont: Random House, 1985. For children from pre-school to grade 1.

20. *The Lion who wouldn't brush his Teeth* by Mike Peele Charlotte, NC: Dental Marketing Concepts, 1981. For parents and their elementary school-aged children.

21. *The Tooth Chicken* by Rick Reinert Productions. Milwaukee, Wi: Ideals Publishing Corp., 1982. Distributed by the American Dental Association, Chicago, ILL. For primary school children.

22. *The Tooth Fairy* by Elinor Gregor. Agincourt, Ont: Dominie Press Ltd., 1982. For multi-ethnic children in grades 1-3.

23. *The Tooth Fairy* by Sharon Peters. Mahwah, NJ: Troll Associates, 1981. A giant first-start reader. For pre-schoolers to those in grade 3.

24. *The Tooth Witch* by Nurit Karlin. Toronto, Ont: Fitzhenry & Whiteside, 1985.

25. *The Trouble with Wednesdays* by Laura Nathanson. New York: B.P. Putnam's Sons, 1986. For junior readers, in grades 5-8.

26. *Tooth Fairy* by Audrey Wood. Singapore: Child's Play (International) Ltd. 1985. For primary children (ages 5-8).

27. *You can't put Braces on Spaces* by Alice Richter & Laura Joffe Numeroff. New York: Greenwillow Books, 1979. Currently out of print. See if you can find a copy. It's excellent! For children in grades 1 to 3.

D. ACTIVITY BOOKS

1. *Activity Sheets*. Winnipeg, Man: Dental Health Unit of the Department of Health, Manitoba Government.

2. *A Visit From the Dentist* Chicago, Ill: American Dental Assoc. Bureau of Health Education & Audiovisual Services, 1984.

3. *Dental Health Activities for Girl Scouts*. Chicago, Ill.: American Dental Assoc. Bureau of Health Education & Audiovisual Services, 1984.

4. *Dental Health Activity Book*. Chicago, Ill.: American Dental Assoc. Bureau of Health Education & Audiovisual Services, 1984. For third and fourth graders. Available in class sets.

5. *I Love My Teeth. I Know Them and I Look After Them*. Montreal, Que.: Dental Depot (Canada) Ltd. Also distributed by Healthco, Ottawa, Ont. Available in English and in French. For children in grades 3-4.

6. *Activity Sheets* Ministry of Health, Government of Ontario.

7. *Mother Goose Talks about Teeth*. Phoenix, AZ: Semantodontics Inc. For primary children.

8. *The ABC's of Good Oral Health*. Chicago, Ill: American Dental Assoc., Bureau of Health Education & Audiovisual Services, 1986.

9. *The Big Adventure Dental Activity Book*. Phoenix, Az.: Semantodontics Inc. For children aged 6-12.

10. *The Healthy Took Coloring Book*. Phoenix, Az.: Semantodontics Inc. For children in the primary grades (1-3).

11. *The Kids Fun Game Book*. Phoenix, Az.: Semantodontics Inc. For children in grades 3-6.

12. *Tommy the Toothbrush* by Robert D. Miller. Athens, Oh: Millrow Enterprises Inc., 1982. For children in grades 2 to 4.

E. BOOKS FOR DENTAL EDUCATORS

1. *Dental Health. A Teacher's Guide*. K-12. Second edition. Ottawa: Health and Welfare Canada, 1981.

2. *Growing up with my teeth* by Kenneth R. Whitcomb, DDS. Phoenix, Az: Semantodontics, Inc., 1984. A parent's guide to children's dental development.

3. *Health Education Dental Health. Teaching supports*. Winnipeg, Man: Curriculum Development & Implementation Branch, Education Department, Manitoba Government. Available from Manitoba Textbook Bureau, 277 Hutchings Street, Winnipeg for \$1.50 per booklet.

4. *Learning about your Oral Health*. A prevention-oriented school program. Chicago, Ill: American Dental Assoc. Bureau of Health Education & Audiovisual Services, 1982. Five booklets (kindergarten, 1-3, 4-6, 7-9, 10-12).

An annotated bibliography of all books on the subject, not just these recommended above, is available by writing to the author: Dr. Ruth Rees, Faculty of Education, Queen's University, Kingston, Ontario K7L 4V1 (613) 545-6620. Please send a cheque or money order for \$4.00 to cover the printing and postal charges.

* This article was first published in the May 1989 edition of the *Canadian Dental Association's Journal*.



Editor's Note ➡

Thank you to the hygienists of the B.C. interior for this issue's abstracts.

If your group would like to contribute to an issue please contact me & I will forward the necessary periodicals.

Effect of a Chemotherapeutic Agent Delivered by an Oral Irrigation Device on Plaque, Gingivitis, and Subgingival Microflora

S.G. Ciancio, M.L. Mather, J.J. Zambon, H.S. Reynolds
J. Periodontol Vol. 60, No. 6, 06/19/89, pgs. 310-315

Sixty-six adults were examined in a double-blind, split-mouth study which examined the effect an antimicrobial agent delivered by an oral irrigating device as an adjunct to normal oral hygiene care.

The selected subjects were screened for gingival index, gingival crevicular fluid volume, plaque index, modified papillary bleeding index, probing pocket depths and attachment levels. They then received a randomized half mouth dental scaling and prophylaxis.

All subjects were assigned to an antimicrobial agent or hydroalcoholic control in an oral irrigator seven days after the prophylaxis.

Data for the study were recorded at screening, baseline (7 days after prophylaxis) and at 3 and 6 weeks.

The composition of the subgingival microflora to the prophied and non-prophied quadrants were evaluated by phase contrast microscope and by immunofluorescence.

The data from the study demonstrated that notable reductions in plaque, gingival bleeding and total bacterial counts could occur from the use of chemotherapeutic agent delivered by an oral irrigating device and may, therefore, be an effective adjunct to normal oral hygiene.

Mirella Profeta

Occurrence of Gingival Recession in Adults

Vehkalahti, M.
J. Periodontol 1989; 60: 599-603

A total of 258 Finnish adults, aged 30 years and older, were examined participants for a study measuring gingival recession. Sixty-eight percent of the participants had recession present on at least one tooth surface with recession significantly more prevalent in older subjects. Women had recession present more frequently than men, and those women with recession had fewer natural teeth than did those without recession. Correspondingly, men with recession had a greater number of surfaces with root caries. When examining the localization of recession, mandibular teeth had more surfaces with recession than did maxillary, as well, the sites of recession occurred quite symmetrically.

Recession was also shown to be associated with the frequency of toothbrushing. Frequent toothbrushers had, both in the maxilla and the mandible, more surfaces with recession than those who did not brush daily.

Christine A. Jobs, R.D.H.

The Use of Chlorhexidine in the Management of Gingivitis in Children — 191 boys

M. de la Rosa
O.P. Sturzenberger - D.S. Moore
Journal of Periodontology, Volume 59 #6 June 1988

Two clinical studies (1 year apart) of 191 boys (ages 8 to 18) were conducted in a boarding school in Monterey, Mexico to determine the effectiveness of .12% chlorhexidine in the control of gingivitis and to observe any side effects present. After clinical prophylaxis and oral hygiene instruction, one group of students rinsed 2 times per day under supervision with 15 milliliters of .12% chlorhexidine, while the second group rinsed with a placebo. The result showed a 50% reduction in gingivitis in the 12-week study and 34 to 36% reduction in the 10-week study. Some side effects observed were intrinsic: stain, supragingival calculus and mild epithelial desquamation in some chlorhexidine subjects but discomfort was not present nor was general oral health affected.

Andree Rhodes, R.D.H.

In vitro Effectiveness of a Newly-Designed Ultrasonic Scaler Tip for Furcation Areas

Shigeru Oda and Isao Ishikawa
Journal of Periodontology, Volume 60, Number 11, November 1989

An *in vitro* comparison of the accessibility and effectiveness of a newly-designed ultrasonic tip with conventional hand cures and ultrasonic scaler tips in furcation areas was undertaken.

Three groups of teeth, each containing 20 maxillary and 20 mandibular molars were used. Each furcation was marked with black felt marker, fixed in a jaw model at the location of the first molar, and instrumented with either the new spiral shaped furcation tip with a spherical end, the straight-type standard tip, or the 11/12 and 13/14 Gracey cures. After instrumentation each tooth was photographed using a 5X stereomicroscope and a percentage of the remaining colored area calculated. Replica models were made and observed under a scanning electron microscope to examine morphological changes of furcation areas. Results indicated that the newly-designed tip left only 15.1% and 16.7% of the colored marker on the maxillary and mandibular molars respectively, compared with 50.3% and 44.1% for the standard tip, and 61.1% and 39.5% for Gracey cures. Those teeth instrumented by the newly-designed tip also maintained relatively smoother surfaces.

The study concludes that the newly-designed spherical furcation tip demonstrates greater accessibility and effectiveness in furcation areas and is also superior with respect to morphological changes to the surfaces after instrumentation.

Effects of workplace smoking bans on cigarette consumption

Ron Borland, Simon Chapma, Neville Owen, David Hill
American Journal of Public Health, Feb. 1990, Vol. 80, No. 2, pp 178-180.

A total of 2,113 employees of the Australian Public Service were surveyed two to four weeks before the deadline for implementation of a total ban on workplace smoking, and again five to six months later. Only those who reported being smokers at both surveys were considered — numbering 391. Taken into account in determining pre-deadline consumption, the group was divided into two; depending on restrictions on consumption: those who could smoke at their work station, and those who could not. To further study the consumption reduction in respondents for whom there had been no restrictions prior to the mandated ban, levels of consumption prior to the ban were divided into three categories: Light, Moderate, Heavy. The introduction of the Workplace Smoking Ban was associated with reduced levels of cigarette consumption. Those who benefited the most were the heavier smokers, where the reduction in consumption was over 25 percent.

Shelley Hawrys, R.D.H.

Influence of increased toothbrushing frequency on dental health in low, optimal and high fluoride areas in Finland

Ainamo, J., and Parviainen, K.
Comm. Dent. Oral Epidemiol., 17: 296-9, 1989.

Finnish children, aged 13-15, showed a significant improvement in their dental health from 1973 to 1982. The purpose of this study was to determine whether this improvement was related to frequency of toothbrushing and the use of a fluoridated toothpaste. In both test years, 40 children were randomly chosen from each of three age cohorts: 13 years, 14 years and 15 years. These 120 children were chosen from three fluoride areas in Finland: one area had low-fluoridated water, one area had the optimal amount, and the third area had water with a high-fluoride content. Hence, 360 children were analyzed in total and their DFS index was scored. The children were also divided into three brushing categories: "infrequent", "daily" or "frequent" brushers. From 1973 to 1982, the number of children who brushed daily and frequently increased. As a result, the overall DFS scores decreased over these years. The decline in scores occurred most significantly in the low-fluoride area. In 1982, the low DFS scores were found to be related to high brushing frequency. However in 1973, no such relationship was found. This DFS score decrease was suggested to be linked with the increase in use of fluoridated toothpaste.

Ms. Shauna R. Nesom, R.D.H.

Pilot Study on Obesity in Caries Prediction

T. Tuomi, Luvia Health Center, Finland Published Apr. '89
Community Dentistry and Oral Epidemiology, Dec. 1989, Vol. 17: No 6:277-332.

This study explored the possibility of predicting future decay using obesity as a predicting variable in 5-13 yr. old children. The subjects were 516 children of Luvia, Finland, born between 1972 and 1981. Knowledge of obesity and caries experience already existed from data at Finnish Health Care Centers. Though obesity and caries can both arise from incorrect eating habits, obesity alone was not a very good predictor of dental decay. Combining obesity and earlier caries experience as predicting indicators, 70% of the true risk group was identified. This is a clear advantage in protecting erupting permanent molars. Predictive ability proved to be at least as good as microbiological or other laboratory tests.

Jann Mackenzie, R.D.H.

A Longitudinal Study Comparing Scaling, Osseous Surgery and Modified Widman Procedures. Results after One Year

William Becker, Burton E. Becker, Clifford Ochsenbein, Gloria Kerry, Raul Caffesse, Edith C. Morrison and John Prichard,
Journal of Periodontology, Volume 59, Number 6, June 88

This is the 12-month data presented from an on-going study with a group of 16 periodontally involved adults, in a private practice setting. Screening parameters included pocket depth (PD), attachment level (AL), gingival index (GI), plaque index (PI), mobility, and furcation involvement. After two one-hour sessions of scaling and root planing by a hygienist using no anesthetic, the patients were randomly placed in one of three groups. The study compared the longitudinal effectiveness of scaling and root planing, the modified Widman flap procedure and osseous surgery.

The patients were seen for baseline parameters 3-4 weeks post-scaling, and put on a strict 3-month recall schedule.

Plaque and gingival indices were reduced markedly over the year-long period and clinical attachment levels were noted to have had slight gains with all 3 procedures in pockets 4mm or greater. Only osseous surgery had a clinical attachment loss after 1 year, for pockets 1-3mm.

Probing in the shallow (1-3mm) pockets indicated a reduction for all groups after one year. However, even though pockets over 4mm showed improvement in all cases, there was more significant reduction in these deeper pockets when treated with osseous surgery and the Modified Widman.

Scaling produced the least recession of all 3 procedures, with pockets of any depth, but the amount of recession produced with the surgical procedures was negligible. Based on recession levels in the Modified Widman group (first rebound of soft tissue at 6 months, then recession at 1 year), the study suggests that periodontal healing after definitive therapy is ongoing for over a year.

This study indicates that when treating patients with pocket depths of 4mm or more, surgery is the method of choice. It reduces the pocket depth of these areas more significantly than scaling alone, and also increases the chance that a motivated patient will be able to personally maintain a level of good oral hygiene on a daily basis.

Lori K. Wence, R.D.H.

Bruce Paton



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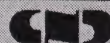
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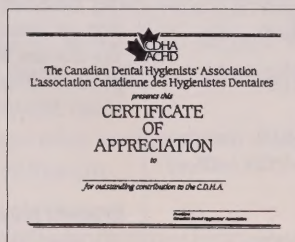
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† Supragingival Calculus Formation Study: "A Study to Compare the Effects of Two Dentifrice Products on Adult Supragingival Dental Calculus Formation" 1989. Data on file, SmithKline Beecham Canada.

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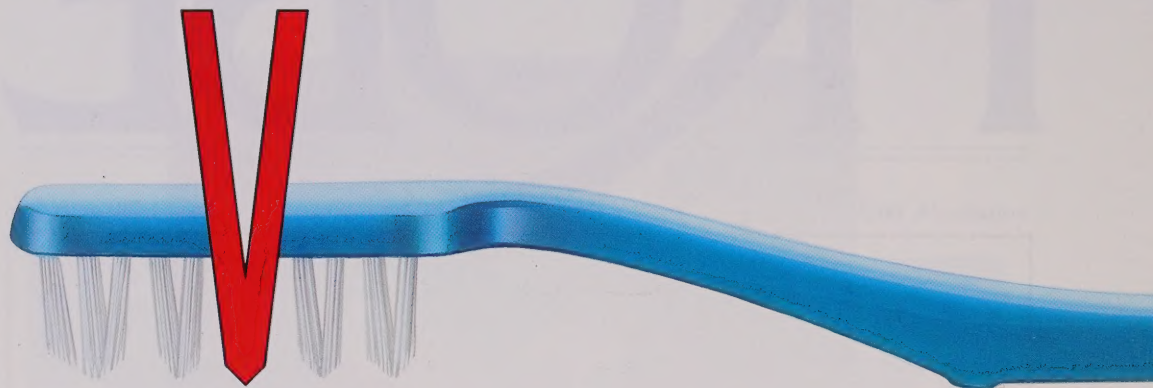
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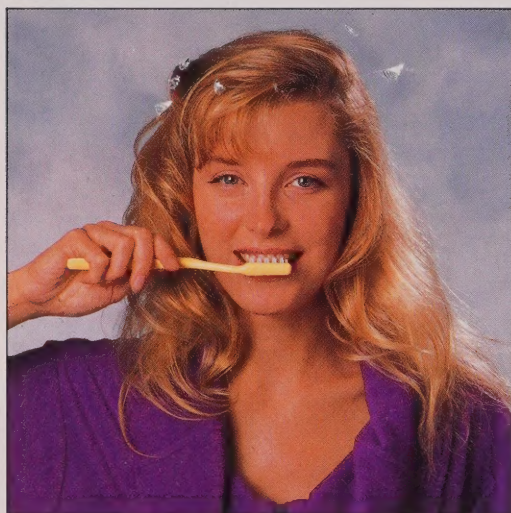
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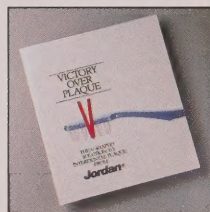
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PRESIDENT'S MESSAGE



Myrna Frizell, Dip DH
Myrna resides in Kitscoty, Alberta, and is employed with the Minburn-Vermilion Health Unit as Director of Health Promotion.

Entering the 1990s, dental hygienists across Canada face change, challenge and new opportunity in their profession.

Patterns of oral health are altering both need and demand for oral health care. Our older adult population is increasing. Dental care needs of the poor, one-parent families, native people and new immigrants are higher than average. Oral disease patterns are changing. Access to care through insurance plans, a trend toward healthy lifestyles and self-care, and

increased consumer participation in oral health decisions also affect the practice of our profession today.

Promotion of oral health for all Canadians challenges us to seek ways to address those inequities in oral health which reflect economic, geographic, and cultural barriers, or differences in knowledge, behavior and attitude with respect to oral health care. We must respond to the special needs of our older population and place increased emphasis on prevention targeted toward high-risk groups and those most in need.

New opportunities exist for dental hygienists in responding to these changes and challenges. Our profession has a significant role to play in improving access to appropriate health services and in promoting oral health for everyone.

The Canadian Dental Hygienists Association and provincial associations are providing leadership both with the profession and with other dental and health care

groups in planning to meet the oral health challenges of the 1990s.

CDHA's council structure provides active participation by dental hygienists from across the country in defining and addressing the issues related to practice and regulation, professional development, public relations, health promotion, and member services. This in turn helps each of us to prepare for our professional responsibilities today and tomorrow.

Through your support as a new or renewing member, CDHA and your provincial association can continue to work for the benefit of the profession, for you the member, and for the public we serve. I encourage you to participate with pride in your profession through active involvement with your association at the local, provincial, or national level.

Myrna Frizell
President



An Invitation

Moncton 1991 2nd Annual CDHA Professional Conference

*June 6th - 8th, 1991
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The Future of Health Care – Health Promotion. How will it impact on you and your profession?
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CDHA Educators Workshop



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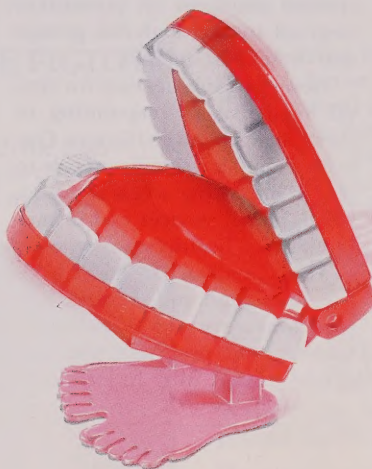
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The Canadian Dental Hygienists Association Journal: Probe is the official publication of CDHA. CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to Probe do not neces-

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By Marilyn Goulding,
RDH, BSc

Dental Hygiene The Future is Ours

This issue of *Probe* is going to shock you. The adrenalin generated by gathering this information has given me an intense dental hygiene-high for the entire summer. You know you're involved in an unrivalled profession when, even after twenty years, you can feel inspired about the years to come and what they will mean to you as a private practice clinician, a public health practitioner, an educator, an administrator, a researcher, a student, or anyone of the unique alternate-practice hygienists out there today. The changes outlined in this issue will affect us all in a positive manner.

Change is rarely comfortable but it's more distressing to become obsolete or, even worse, extinct. What is heartening is that we are in the position to direct our evolution, that is, if we continue to take charge of our destiny and not allow external factions to suppress our growth.

There are several factors in our favour sure to guarantee success in achieving our goal—one is that we are a predominantly female profession. You might well ask when has that ever been to our advantage in business? The socialization of women has taught us valuable skills. Dental hygiene, as well as many other female-dominated

professions, is coming of age. Windows of opportunity are opening for those providers willing to be adaptable and flexible in the times to come.

Women have learned to do several tasks at once, effectively and efficiently. We are accustomed to time restraints. This talent of performing "double-duty" on the job and at home has moulded us into achievers with a penchant for getting on with the business at hand. Give us a goal and watch our dust!

Another advantage, perhaps more difficult to see, is that dental hygienists have had limited power. That's a little like saying we have been at the bottom of the barrel and we can only go up from there. In a sense, that may be true. We, essentially, have everything to gain as our profession emerges. We are people of talent and education who have been waiting to realize our full potential. New legislation may give us this opportunity; a chance to provide greater access to care with the introduction of innovative, cost-effective programs.

We have traditionally, as women, been service and others-oriented. We are well practised in the "prevent and nurture" role and are able to provide our services to the growing population of "new elderly" and target groups requiring care. We are indeed able to assist Canadians in "achieving health for all". We are viewed as an ethical profession with integrity and altruistic goals. We are a profession proud of our accomplishments!

We are notoriously good students. All the skills needed, whether they be in science, research, legislation, administration, negotiation or marketing, are attainable. Dental hygienists tip the scales in scholastic achievements. We are eager to learn!

As an emerging profession, dental hygiene has great hopes and dreams. We have been diligently planning for our future by establishing practice standards and quality assurance. We are accountable!

And finally, we are no longer prepared to be over-educated and under-utilized; neither do we wish to remain regulated by another profession which has often been put in a conflict-of-interest situation because it is made up of our employers. I have great hopes that self-regulation for dental hygiene will alleviate the situation, by removing this burden from dentists, and providing the framework for a truly collegial relationship between the two professions.

I believe that the nation is ready to examine new, alternative methods for delivering health and oral care. Dental hygiene is anxious to participate in these exciting developments, and it is important that dental hygienists be informed and aware of the new paths we must be prepared to take.

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* Potassium nitrate
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CDHA

1st Vice President



CDHA is pleased to welcome Lorraine Boomhour, elected June 1990, Winnipeg, as 1st Vice-President. Lorraine resides in Brampton, Ontario, and has been active in both CDHA and ODHA for many years, serving as a director, and president (1987-88) respectively.

She remains active in the Ontario Society for Preventive Dentistry and the ODHA Legislation Resource Group.



NEW DIRECTOR APPOINTED

Joanne Clovis has been appointed Director of the School of Dental Hygiene, Dalhousie University, commencing July 1, 1990. Joanne is a graduate of the University of Alberta programs in Dental Hygiene, Education and Master of Science. She has been an associate professor in Dental Hygiene at Dalhousie for the past two years. Prior to that, she was dental health consultant with the Department of Community and Occupational Health, Province of Alberta, for 12 years and part-time lecturer at the Faculty of Dentistry, University of Alberta for 15 years. Joanne has been an active member of CDHA, ADHA, and NSDHA. She is past-president, ADHA, and has been chair of CDHA's Community Dental Health Committee (1979-1987), and speaker for the Board of Directors of CDHA (1981 and 1985). She was project director for the CDHA's highly successful "Smile for Life" project. Joanne was a member of the Federal government Working Group on the Practice of Dental Hygiene and is currently a member of the Steering Committee on Oral Health Promotion. Joanne's outstanding contribution to dental hygiene has been recognized by the establishment in her name of an award for community service by the ADHA, and life-membership in CDHA.

Report on CDHA Educator's Workshop

After attending the Educators Workshop held in Winnipeg prior to the 25th Anniversary of the University of Manitoba, School of Dental Hygiene joint event with the 1st CDHA Professional Conference, June 1990, three descriptors come immediately to mind: educational, energizing and enjoyable.

Educationally, there was a review regarding objective-writing, raising the level of cognitive, behavioral and effective competencies in the field of dental hygiene and thus emphasizing a curriculum reflecting high standards of decision-making skills and evaluation-making skills.

Energizing, as there was continual active participation through-

out the workshop, particularly during the small group sessions on clinical one-to-one teaching where dental hygiene students presented anonymous patients' clinical cases to a volunteer participant for peer group evaluation.

Enjoyable, in that it offered a forum for the reunion of old and union of new educators. These events always provide the opportunity for the informal and formal exchange of ideas and practices of the Schools of Dental Hygiene across Canada ... and that is always great fun!

Laura MacDonald, participant
*School of Dental Hygiene
University of Manitoba*



Participants at 1990 CDHA Educator's Workshop

Highlights of the CDHA Professional Conference

**June 21-23, 1990
Winnipeg, Manitoba**

**Thursday June 21
Opening Night**

The conference opened with a sumptuous wine and cheese reception hosted by Leeming Pacquin. The University of Manitoba, Faculty of Dental Hygiene, presented a nostalgic display of memorabilia spanning its 25 years of existence, along with photos of all its graduating classes. There was a brief bevy of speakers bringing greetings and warm welcome messages to the registrants and alumni.

This reception was somewhat more rousing than most as, being held in conjunction with the University of Manitoba, Faculty of Dental Hygiene's 25th Anniversary Celebrations, the room was literally booming with the jubilant recognition of classmates from the past. It was a most entertaining prelude to the conference.

**Friday June 22
A.M. Day 1**

The first day's speaker was Dr. Irene Woodall, the well-known educator, researcher, consultant, Editor of "RDH", and author of "Comprehensive Dental Hygiene Care". Her topic was "Energizing Dental Hygiene: The Decade Ahead and Beyond". This lady not only knows how to energize dental hygiene, she knows how to energize dental hygienists! The audience was more than enthusiastic.

We discussed and defined where we are today as a profession, and how we arrived here. A short review of our history, both in the

U.S. and Canada, was both reflective and enlightening. Irene brought out the pattern that the evolution of dental hygiene has woven over the years, and we discussed the similarities that we in Canada have and the differences we may begin to initiate.

The discussion became extremely animated when we took part in an exercise to define ourselves, as a profession, through assignment of a list of adjectives describing the "typical" dental hygienist. It was a creative way to incite reflection on the profession, providing an opportunity for deciding just how we would change any one of these adjectives. To illustrate; we need to, as a whole, become more "risk-taking" and less "conservative", more "wholistic" and less "oral", more "administrative" and less "technical".

The morning ended much too soon.

Luncheon Day 1

Luncheon focused on the University of Manitoba and its special occasion. The guest of honour was the founding director of the dental hygiene program, Professor Margery Forgay, and the order of the day was the presentation of an Endowment Plaque to her on behalf of the University.

The first graduating class was present and made up one of the three tables of honoured guests. Professor Forgay was also presented with a silver bell by her family members. It was a memorable occasion.

P.M. Day 1

In the afternoon Dr. Woodall continued her presentation, now concentrating on the more clinical aspect of dental hygiene treatment planning. She brought out a term not regularly used, that being, "Dental Hygiene Diagnosis". After



First graduating class, University of Manitoba

assessment of each patient/client we do arrive at an overall diagnosis, as it applies to our areas of expertise. It is important that we recognize this diagnostic step in order to progress to the planning and implementation stages of any treatment regimen. After final evaluation of the progress we may have to re-institute this dental hygiene diagnosis in order to document results. This repeated routine will ensure that we, as clinicians, provide care that is properly sequenced, progressive, comprehensive, well-tracked and documented, and goal-oriented. It focuses on problems, but more important, it focuses on goals. Dr. Woodall's presentation gave us all food for thought.

The Roast

That evening we all enjoyed one of the highlights of the conference, the river boat cruise and dinner with a "Roast for Marnie Forgay". No skeleton was left hiding in the closet when the panel finished roasting Marnie. Fortunately she has a quick wit and satirical style all her own, providing us with laughs which shook the boat even more than did the waves!

Saturday June 23

A.M. Day 2

This day began early with a breakfast hosted by F.W. Horner Inc., for the purpose of round-table discussions on the direction of this year's Dental Hygiene Campaign.

Dr. Jane Fulton, Professor of Strategic Management and Health Policy at the University of Ottawa, host of CBC's weekly radio feature, "Health Watch", and author of several books including, "The Regulation of Emerging Health Care Occupations" and "Health Care in Canada", began at 9:00 on her topic, "New Vision for Health in Canada. Where Does Dental Hygiene Fit In?".

She expounded on the idea of a more wholistic approach to health care in the future and how, as health promotion specialists, we stand to adapt well if we choose to become proactive in designing our role. The changing demographics will present a rising percentage of the well-elderly from an elevated socio-economic base who will be demanding and conscious consumers. If dental hygiene moves in the direction to provide a cost-effective and comprehensive access-to-care model, we can serve this and other sectors of the populace well.

Dr. Fulton discussed how this might be achieved by teaching our own to become effective consumer advocates, initiating interdisciplinary network building, and opening up areas of research for dental hygienists.

She provided a dynamic and thought-provoking morning.

Luncheon Day 2

Dr. Esther Wilkins was the featured speaker at the luncheon, reflecting on her years in dental hygiene and where the future was taking us. She also graciously remained to autograph numerous

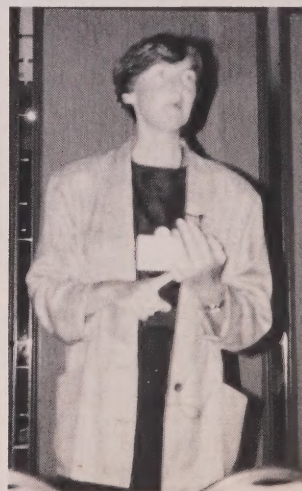
copies of her latest edition of "Clinical Practice of the Dental Hygienist", the volume on which many of us were reared.

Our new CDHA Executive was welcomed with Henry King stepping into past presidency while Myrna Frizell, from Alberta, came forth to accept the leadership role for 1990/91.

PM. Day 2

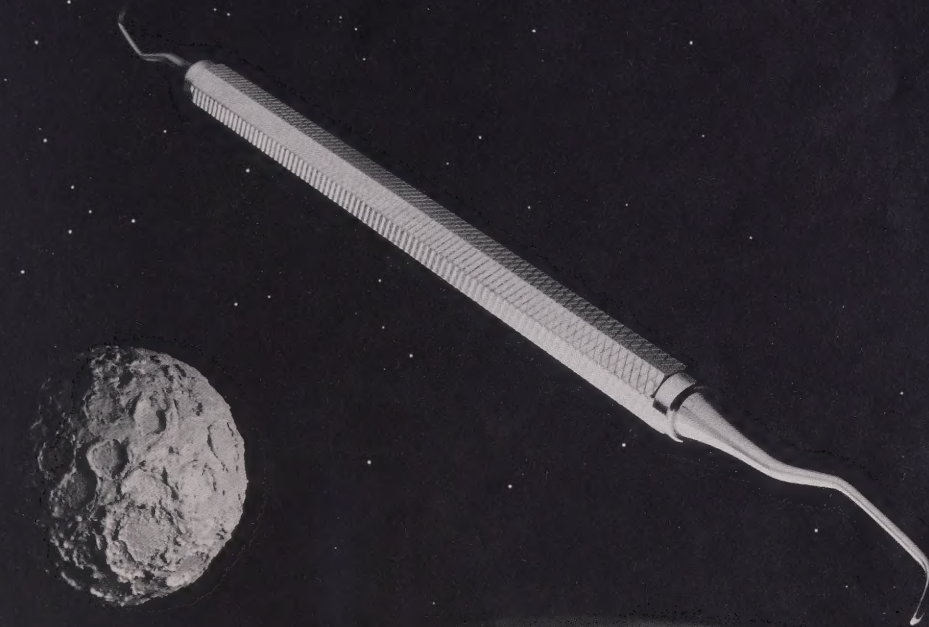
In contrast to many conferences, the final afternoon still boasted a full-house. Jane Fulton was not to be missed! Her afternoon topic, "Professional Partners or Employees?" was highly anticipated.

She centered on four areas, our strengths, weaknesses, threats, and opportunities. We discovered that, although we are novice in some areas such as lobbying skills and risk-taking tendencies, our strengths lie in the fact that we have good provincial and national organizations and a willingness to change. Our biggest challenge will be maintaining collegial relationships with dentists, largely our employers, as we evolve. Our biggest opportunity is the changing health legislation throughout the



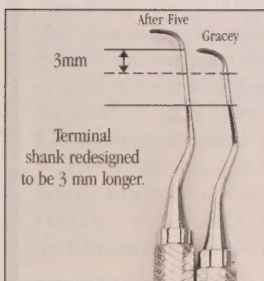
The interview with Jane Fulton

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country, offering us a chance to be instrumental in directing our collective future.

Dr Fulton's encore came unexpectedly when the press arrived for an interview, and she chose to create her own "window of opportunity" by conducting the interview as part of her presentation! She gave us an impromptu, hands-on lesson in handling the media. What can I say? Dr. Fulton deserved her standing ovation, and so did those two brave reporters!

Thank you Winnipeg, and all those involved, for an energizing and visionary conference.

■ **Winnipeg Winner**

Congratulations to Barbara Belcher (Manitoba) winner of the early bird registration draw. She receives an Anniversary/Conference refund.

Special thanks to the following Reunion/Conference sponsors for their support:

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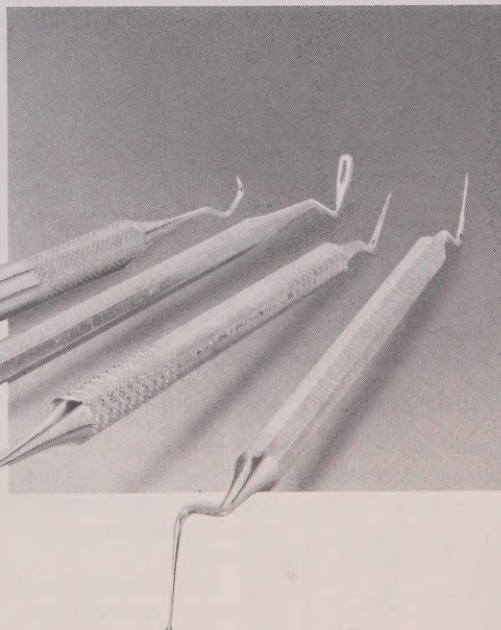


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Highlights of the CDHA Board of Directors' Meeting

**June 24-26, 1990
Winnipeg, Manitoba**

**Sunday June 24
Pre-Board Workshop**

Councils (Practice and Regulation, Member Services, Professional Development, and Public Relations), met separately to work on issues relating to each of these areas. Junior board members sat in to become acquainted with the format of the new structure. The influx of new board members is staggered in order to maintain experienced personnel in each council, thereby giving continuity and support to novice volunteers. The new council structure is now going into its second year and functioning well. Councils have identified a need for more appointed time for interaction between councils as some projects cross the jurisdiction of several councils. However, the working time is kept informal for this very purpose and spontaneous pow-wows are not uncommon.

**Monday/Tuesday June 25-26
Board Meeting**

The annual Board Meeting is a time of decision making and the formal "changing of the guard". This year we witnessed the handing of the gavel (and crown) from our own King Henry (Henry King) to the incoming President, Myrna Frizell. In due turn the whole Executive Council makes one shift; Terry Mitchell becomes President-Elect and we welcome our new First Vice-President, Lorraine Boomhour. Lorraine comes to us from Ontario with much experience and history in dental hygiene ad-



Crowning CDHA 1990/91 President

ministration, having been the president of the ODHA in 1987.

One other important shift (aside from the board), was the resignation of our CDHA Business Manager, Dianne Tivy, who is heading back to university this September to finish her Master's Degree in Public Administration. We will surely miss Dianne's expertise and guidance in our affairs and wish her well. She will be succeeded by Monique Rock, who has been with us in an administrative assistant capacity for some years.

The highlights of the business at hand are as follows:

- 1) There will be NO increase in the CDHA membership fees this year. Considering the scope of work underway and the strides being made by the board, on behalf of our profession, this is a significant announcement.
- 2) There will be a move for the Central Office, just across the

hall to larger quarters. The address will remain the same thereby saving a change of letterhead and the confusion that goes with it. We will now have a boardroom and space to accommodate additional personnel; Elizabeth Perrin, assigned as Managing Editor of the journal, and Barbara Cole our new Secretary. Central Office will now be a model of efficiency befitting an association on the move.

- 3) The new National Dental Hygiene Campaign Co-ordinator is Dawn Mueller from Calgary. The new logo was unveiled at the Professional Conference, in the days just prior to the Board Meeting and is featured in the current Explorer.
- 4) It was resolved that Canadian Actuarial and Consulting Group Inc. be appointed to seek alternate insurance and benefits plans and their car-

riers to provide state-of-the-art programs for our members. An information package will be sent to all members this fall. Citald made a luncheon presentation to the board outlining its disability package. A question and answer period followed. The new plan is comprehensive and cost-effective.

- 5) The annual CDHA/ADHA liaison meeting will be hosted by Canada in the spring of 1991 and will be held in Ottawa.
- 6) It was resolved that the CDHA continue to contribute to the Canadian Fund for Dental Education. This fund is available to dental hygienists.
- 7) It was resolved that the CDHA establish an Endowment Fund in 1990 to stimulate funding for education and research projects.
- 8) An editorial board was instituted to assist the Scientific Editor in establishing terms of reference for the position and policy statements for the journal. The Scientific Editor will sit as chair of the board and the members are as follows: Ellen Brownstone, Sharon Amer, Dianne Gallagher, and Joanne Clovis.
- 9) It was resolved that the CDHA adopt the following policy:

CDHA actively seeks corporate sponsorship as a source of revenue to:

1) fund oral health promotion projects; 2) promote the role of the dental hygiene profession in health promotion; and 3) augment member services beyond that which can be supported by membership fees.

Be it noted that acceptance of corporate sponsorship: does not imply CDHA product endorsement, as CDHA does not evaluate products; and shall not influence decisions regarding publication of scientific research.

- 10) It was resolved that the CDHA adopt the following position statement on Dental Health Month and National Dental Hygiene Campaign:

The CDHA supports participation in Dental Health Month as a means to promote oral health in collaboration with other health professionals to contribute toward the oral health of the public.

Be it noted that National Dental Hygiene Campaign provides a means to promote the profession of dental hygiene and to increase awareness of the role of the dental hygienist in contributing toward the oral health of the public.

- 11) It was resolved that the CDHA adopt the following policy regarding collaborative practice setting:

In the best interest of the oral health of the Canadian public, CDHA supports the delivery of care through a collaborative practice model in which the dental hygienist proposes and provides the dental hygiene care component within a comprehensive oral health plan.

Comments

In keeping with the focus of this issue on the future of dental hygiene I deem it appropriate to comment on the timely effort of the Association. Considering that all the board members, advisors, resource people, and appointees are volunteers, and have full-time jobs and families to attend to as well, they put forth extensive time and effort on behalf of all Canadian hygienists — members and non-members. Imagine the funds and resource people we would have if all dental hygienists in Canada were to support our Association. Granted, there could never be unanimous consensus on every issue, but we are democratic and majority rules. Generally, the wheels of this democracy grind slowly and we do progress in the right direction; one that will benefit the profession as a whole. So help us by putting your shoulder to our wheel — I'd say we're on a roll!



President's Luncheon

Left to right: P. Johnson, M. Frizell, H. King, T. Mitchell, E. Brownstone

Highlights of the Symposium on Clinical Dental Hygiene

Directions for Research, Teaching and Evaluation

sponsored by the:
University of Alberta,
Division of Dental Hygiene
Faculty of Dentistry

held at:
The Chateau Lacombe,
Edmonton, Alberta,
June 27-29, 1990

This two-day symposium was composed of all the aspects inherent in a well-organized, diverse, and action-oriented presentation. It began with Denise Bowen, an Associate Professor in Dental Hygiene at Idaho State University, a consultant with the National Institute of Dental Research (NIDR), co-author of the text, "Research Methods for Oral Health Professionals" and Chair of the Council on Research for the American Dental Hygienists Association, giving the keynote address. It was entitled, "Dental Hygiene Research: Issues and Challenges of the Next Decade." She discussed NIDR's long-range plans and how dental hygiene could conceivably fit into these areas for research on its own. Apparently health promotion will be a key focus and dental hygiene is well adapted in this field.

Janet Ross Kerr, Professor and Past Associate Dean of Undergraduate Education, Faculty of Nursing, University of Alberta, past president of the Alberta Association of Registered Nurses, board member of the Canadian Nurses Association, and co-author of the

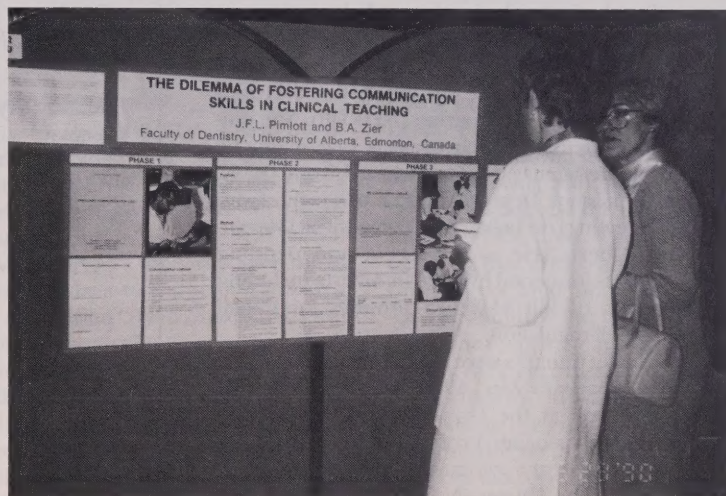
book, "Canadian Nursing: Issues and Perspectives", followed with her presentation of "A Research Paradigm in an Emerging Discipline". She noted that research efforts must evaluate the "whole" and not reduce, to individual foci, without recognition of the whole.

Margaret Walsh made the "trigger" presentation, "Toward the Development of a Conceptual Framework for the Dental Hygiene Profession". Dr. Walsh is Associate Professor and Chair of the Division of Dental Hygiene and Preventive Dentistry, Department of Public Health and Hygiene at the University of California School of Dentistry in San Francisco. She presented a model which delineated dental hygiene theory, process, and practice and discerned between the practice of dental hygiene and the science of the discipline. We were able to have a preview of the metaparadigm she is working on with the UCSF Dental Hygiene

Faculty which defines the specifics of human needs as they relate to dental hygiene.

This was followed by the reactor panel, comprised of three well-known dental hygiene personalities, Denise Bowen, Patricia Johnson and Irene Woodall. This discussion was fascinating, to say the least, although I purposefully won't go into it at this time, as we hope to have the proceedings of the conference available before the end of this year. Only a full discussion of the issues presented could do the symposium justice.

All participants were given the opportunity to do some planning for the future of research for dental hygiene in the workshop sessions. The four areas debated were; 1) Clinical Dental Hygiene Therapeutic Modalities and Technology, 2) Dental Hygiene Practice, Regulation and Quality Assurance, 3) Epidemiology, Community Disease Prevention and



Oral Health Promotion, and 4) Dental Hygiene Education, Curriculum, Clinical Teaching and Evaluation. The results were presented on the final day of the symposium, proving that dental hygienists are more than capable of planning their own future and establishing directives for progress in the profession.

Research, already completed by dental hygienists, was viewed in the form of poster and oral presentations. Tough choices had to be made by registrants when choosing which to attend.

Luncheon speakers over the two days included Majia Kagis, representative for the National Health Research Development Program (NHRDP). She outlined the kinds of research projects that might be funded by the agency. We also heard from Dr. K. Hodgins, Assistant Deputy Minister of Health, who brought greetings on behalf of the Provincial Government of Alberta. He noted recent and pending developments for dental hygiene in Alberta including proclamation of Bill 44 which provides for dental hygienists' self-regulation.

The closing remarks were made by the symposium organizers, Barbara Zier, Chair of the Division of Dental Hygiene at the University of Alberta, and Janice Pimlott, Associate Professor.

Proceedings of the symposium are forthcoming. Thank you to the University of Alberta, along with Ms. Zier and Ms. Pimlott, for providing dental hygiene with such a timely and future-oriented meeting-of-the-minds, and thank you to their organizing committee; Marg Wilson, Brenda Walker, Jan Ritchie and Paulette Schulte.



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Biggs for Breakfast

A Bigg Promotion for Dental Hygiene

By Angela Best, DipDH
A 1990 graduate of Dalhousie University, Angela will be starting full-time employment in Saint John, New Brunswick.

A Halifax radio promotion, held in conjunction with National Dental Hygiene week in 1989, was intended to increase public awareness of the role of the dental hygienist through public media exposure.

John Biggs, the morning show announcer for radio station C100, was chosen because of the popularity of this light rock radio station and because Mr. Biggs plays to a large audience of prime-time listeners – approximately 129,000. The John Biggs Morning Show is casual, funny, informative and variable enough to appeal to many.

After an initial meeting with Mr. Biggs, he agreed to come to the School of Dental Hygiene at Dalhousie University for a plaque index check and other dental hygiene services as required, for the period of one week and a total of six appointments. The goals of the visits were to improve Mr. Biggs' oral hygiene status and oral health awareness, as well as to give him a broad perspective of the role of the dental hygienist. Mr. Biggs would then be able to discuss dental hygiene with a broadened knowledge base and significant personal experience.

First appointment

During the first appointment the health history was completed and an extra oral head and neck exam was given. Since Mr. Biggs never had a extra oral exam before, extra time was taken to explain what was happening and why. A modified OHI-S (Simplified Oral Hygiene Index) with the maximum score being 18 was taken; Mr. Biggs' initial score was eight. Sulcular brushing and flossing were demonstrated. Mr. Biggs was a highly motivated patient so several home goals for daily brushing and flossing were set. He was to note the change to healthier tissue and the reduction in bleeding while practising his home care regimen. Oral rinses such as Plax, Viadent and Listermint, regular and tartar-fighting toothpastes and the amounts that should be used were discussed. Mr. Biggs was also very concerned about the appearance of his teeth, although they were very straight and in good shape. He did have some attrition, however, on the lower anteriors. He questioned the possibility of having crowns, so a thorough description of what would be involved in having teeth crowned was given.

Second appointment

On the second visit, Mr. Biggs' blood pressure and pulse were taken. He was quite surprised that the noting of vital signs is part of a complete assignment. Mr. Biggs was in the process of quitting smoking (down to 1 cigarette a day), so during the intro oral exam refer-

ences were made to areas of particular interest. An amalgam overhand was removed from the distal of the 4-5 which Mr. Biggs could never floss because the floss would shred in this area. The probing depth in that area read 5mm and the gingiva bled upon probing. This was pointed out to Mr. Biggs. No other significant probing depths were recorded. Mr. Biggs' plaque index score was four; he was still missing the gingival margin of his posterior teeth, so brushing in this area was reviewed.

Third appointment

By the third visit, Mr. Biggs' plaque index score was down to two! Many of the restorations on the lingual of his anterior teeth were very rough and needed repair. The possibility of smoothing out these areas which would facilitate better plaque control was discussed. Scaling, selective polishing, application of topical fluoride and desensitizing of the 1-6 were completed during the remainder of the appointment. One periapical of the mandibular anteriors was taken before Mr. Biggs left.

Appointments four to six

At the fourth visit, Mr. Biggs' plaque index score remained at two. A resin patch on the 1-1 distal incisal edge was completed and a maxillary impression for a mouth guard was poured.

By the fifth visit, Mr. Biggs was missing only one area in his brushing, the lingual of quadrant 4. The plaque index was one. The prob-

ing depth of the distal of the 4-5 was 4mm with no bleeding.

On the final visit, Mr. Biggs attained a plaque index score of 0! The mouthguard was fitted and a recall appointment was made for another plaque check.

Conclusion

The prognosis for Mr. Biggs and dental hygiene is excellent! He is a highly motivated individual who will maintain his personal oral hygiene care.

Throughout the week on his radio show, Mr. Biggs made many comments about some of the areas touched on during his appointments. Each day on his radio show he announced his plaque index score, and on Monday of the following week he announced that he had reached the ideal.

This method of promoting public awareness is very effective as Mr. Biggs has a large listening audience. He, and other media



personalities, can be very influential in shaping public ideas about oral health and dental hygiene.

During the 1990 National Dental Hygiene Week, wouldn't it be fun to see a battle of the networks?

Above:

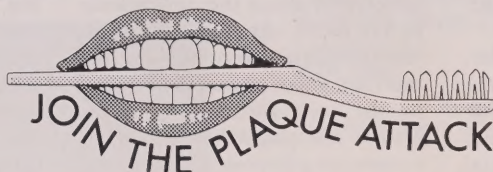
Angela Best with radio announcer John Biggs. Mr. Biggs discussed his oral hygiene status with his audience of 129,000 listeners as part of a promotion for National Dental Hygiene Week 1989.

NATIONAL DENTAL HYGIENE WEEK

October 14-20, 1990

After a very successful 1989 campaign, we're entering the final stretch in planning for the 1990 campaign. Now it's time for dental hygienists to get on board and undertake activities to promote dental hygiene and our profession.

We have a **new slogan** and a **new logo**.



Join the plaque attack, ask your hygienist how ... was carefully designed to:

- focus the campaign on the major source of dental problems, plaque.
- call for consumer action
- highlight the role of the hygienist

We believe this slogan will make it easy for you to carry your message to a wide audience on radio and TV, in print, in small group discussions, in displays and in one-to-one conversations with patients.

Courtesy of Frank W. Horner Inc., we have a **new poster** for you to hang in your offices, in schools, in malls, in senior centres or wherever you will be during October. Once again, in the poster there is a call for action and participation.

BRITISH COLUMBIA

At the present time BCDHA, as part of its research into the professionalization of dental hygiene, is investigating the regulation of dental hygiene by dental hygienists in B.C. To assist with this project BCDHA retained legal counsel to provide opinions on such topics as the current status of dental hygienists under the Dentists Act in B.C., what self-regulation means and what dental hygiene's options are for self-regulation under the Dentists Act, under a separate act and under Bill 91 (proposed Health Disciplines Act).

The information provided in a report to the BCDHA Board of Directors in April will serve as the basis for continued study of the pros and cons of each of the three possible options. In addition, and of great importance, will be a thorough investigation of the consequences of each option to dental hygiene, the profession of dentistry and the public. It is anticipated that the process of change will be slow and should be, in order to facilitate careful decision-making.

D. Thomas

ONTARIO

The proposed Health Professions Legislation has received first reading at Queen's Park and unfortunately didn't receive second reading before the house recessed for the summer. After the Ontario fall election the bill will receive second reading and go to committee. Nevertheless, sub-committees of the Steering Committee are still meeting and working on proposals for the proposed College.

The Royal College of Dental Surgeons has appointed Ms.

Michelle Harding, public member of council, to the Task Force on Dental Hygiene Regulations whose mandate is to review the current dental hygiene regulations and to identify potential changes. The Task Force consists of three dental hygienists from the RCDS and three from ODHA.

The special levy of the dental hygiene licence fee (\$40.00) will be continued for 1991. The purpose of the fund is to provide a degree of funding to assist in the organizational aspects of the College of Dental Hygienists.

L. Boomhour



ALBERTA

Bill 44, the Dental Disciplines Act received all three readings during the spring sitting of the Legislative Assembly of Alberta and received Royal Assent on July 5, 1990. As you are aware, there are steps a bill must take before it becomes a statute. The bill must receive first, second and third reading in the Legislative Assembly of Alberta and if it is approved at third reading, the bill receives Royal Assent from the Lieutenant Governor, the Queen's representative. After Royal Assent the bill is a statute, but the statute is not effective or "in force" until the date set out in the statute for it to come into force. Section 88 of the Dental Disciplines Act states that this Act will come into force on proclamation. This means that at an unspecified future date, the Lieutenant Governor will proclaim the Act in force. Interestingly enough our government sources have advised us of a target date of November 1, 1990 for proclaiming the Dental Disciplines Act in force.

When the Alberta Dental Hygienists Association initiated this current attempt of attaining self-regulation we expected a lengthy process. However, the wheels of progress have turned very quickly and the framework is now in place.

The next three months will be extremely important and busy as our Association prepares for all the obligations and duties set out in the Act. The first objective of ADHA will be to draft our regulations and scope of practice. The second objective will be the appointment of a Registrar. The third objective will be to find a suitable representative for the Dental Disciplines Advisory Committee. Our goal is to be in a position to implement the objectives of the legislation prior to November 1, 1990.

Space does not permit a full dissertation of all objectives and duties which are listed in Bill 44 the Dental Disciplines Act. If your provincial association requires further information please contact:

Alberta Dental
Hygienists Association

N. Wassill-Kendall



MANITOBA

Currently Manitoba Dental Hygienists are licensed through the Manitoba Dental Association (Dental Act).

The Dental Hygienists of Manitoba are seeking self-regulation together with the Dental Nurses and Dental Assistants through The Dental Auxiliaries Association of Manitoba (DAAM).

The Minister of Health is currently reviewing possible mechanisms for DAAM to achieve self-regulation.



NEWFOUNDLAND

The present Dental Act (1983) in Newfoundland recognizes dentists, dental hygienists and dental technicians. The Newfoundland Dental Hygienists Association has one voting member appointed to the Dental Board.

In recent months dental assistants in the province have expressed the desire to be recognized under the Dental Act. If and when this occurs, the Dental Act will have to be opened. At that time dental hygienists will also request changes to the existing regulations.

L. Elkins

NEW BRUNSWICK

Dental hygiene is currently seeking representation on, the soon-to-be-formed, Premier's Council on Health Strategy. A decision is expected, and council members announced, early this fall, 1990.

A recent by-law change allows Class II dental assistants the duty of rubber cap prophylaxis.

NOVA SCOTIA

The Nova Scotia Dental Act was opened for a revision process in January 1990. The NSDHA was consulted for their input and subsequently met on several occasions with representatives of the Provincial Dental Board and the Nova Scotia Dental Association.

A final draft of the revision has been prepared by the Dental Board and will now be presented to the Government legislators for preparation before submission to the Governor-in-Council. Included in the new draft is a provision for mandatory membership in the NSDHA as a prerequisite for licensure. This presently exists for dentists in Nova Scotia, relating to the Nova Scotia Dental Association.

It is anticipated that the proposed new Dental Act will be presented to the members of the Legislative Assembly at the spring 1991 sitting of the House.

S. MacIntosh

SASKATCHEWAN

In April 1990, changes to the Dental Act appeared in the Saskatchewan Gazette which now allow hygienists in Saskatchewan to perform most of their duties under direction. This means if a dentist has seen the patient in the past 365 days and prescribed hygiene treatment,

the hygienist can perform those duties without the dentist being present.

M.A. Wailing

1990-1991 Membership

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M.G.E. Forgay,
DipDH, BA, BEd, MA

With... **Margery G.E. Forgay** Founding director of the School of Dental Hygiene, University of Manitoba at Winnipeg

PROBE: I understand that you've just had a big change in your life. You've left the east coast at Halifax, and your position as Director of Dental Hygiene at Dalhousie, and have come home to the University of Manitoba.

Marnie: That's right. Actually, I was on loan to Dalhousie University from the University of Manitoba for 5 years, during which time I was the director of Dalhousie's dental hygiene program. It was a wonderful experience, a fabulous place to live and to work, I enjoyed every minute of it and now I'm also glad to be home.

PROBE: You were just recognized at the recent 25th Anniversary Celebrations at the University of Manitoba honouring you for being the founding director of the dental hygiene school there.

Marnie: That's true. I guess every program has to have a founder and I got to be Manitoba's. It was a very exciting experience and it's very hard to believe it was 25 years ago. I think the school has had a very successful history and I'm very proud of the record of our graduates. It's been a rewarding experience for me to be associated with dental hygiene education in Canada during this period of dramatic development.

PROBE: Considering your 25 years in dental hygiene, you have been privy to the numerous changes in

our profession over these years. What would you say is the most significant change?

Marnie: I would say there have been two. One is certainly the growth in numbers. When the School Of Dental Hygiene was founded at the University of Manitoba in 1963, there were about 400 hygienists in all of Canada. Now we number ourselves over 6,000 and that is an enormous increase in a relatively short period of time.

The second, and even more exciting change, is the growth of professionalism in dental hygiene during that time. We were just finding our way 25 years ago. There was a lot of seeking out of our own identity, trying to discover who we were. At that time, others were defining for us who we were, and that was appropriate when we began. But now, dental hygiene has its own sense of destiny, its own sense of direction, and has become a well-developed profession in Canada with an extremely competent national organization. That has been a very, very interesting and exciting facet to observe over the years.

PROBE: We've just attended the first Professional Conference for dental hygiene at which we heard some dynamic speakers. Do you have great hopes that we'll follow through on some of their directives?

Marnie: I certainly do. Irene Woodall and Jane Fulton were incredibly good choices for this first Professional Conference. The energy, and excitement, generated by these two extremely competent women was truly electric. You could feel it in the air and I think

it's wonderful. The measure that I use is everyone's attendance: we all stayed until the last minute of the final day of a very taxing and energy-absorbing conference. We were there until the end, standing to give Jane Fulton a rousing round of applause that went on for several minutes. It was dynamic, absolutely dynamic.

PROBE: She had some specific ideas about what we should do to develop as dental hygienists. One of the things that stuck out in my mind was her statement, "Nobody's going to do it for us". Do you feel, given the current leadership we have in our profession, that we have the right skills to take us toward these goals?

Marnie: One of the things I've learned over time in my career is, there are some jobs that you are never completely prepared to do. You just do them; that's how you prepare. As dental hygiene has developed in Canada over the past several years, and has come to the point where, as Jane Fulton pointed out, there is an enormous amount of work to do, we realize we must do it ourselves. Fortunately, we have extremely competent, well educated and dedicated people in this profession and we will do it. Absolutely, no doubt about it: we will do it.

PROBE: Can you comment on the term "window of opportunity" and what it means to the profession of dental hygiene?

Marnie: There are times when circumstances compel us to take advantage of a situation and act; whether or not we feel that we are best prepared. Personally, I think, that in Canada this is now true

about regulation and I think we now have a model in Ontario which other provinces will find valuable. In Nova Scotia, Manitoba, Alberta and B.C., we are finding that there is opportunity for change in regulation of dental hygiene now. It isn't easy to convince the former, or the present, regulating bodies that dental hygiene ought to be self-regulating. But in actual fact, we are almost the only health profession of this nature in Canada that doesn't have self-regulation. We simply must seize the opportunity to have dental acts opened or to interest governments in changes in health occupation legislation to ensure that dental hygiene catches up with other health professions. Because of the way dental hygiene was created and has evolved, it's a little harder for us than it is for some of the other health occupations to do this. But nevertheless I'm convinced that we have the people who are capable of instituting effective change on behalf of dental hygiene, and these people are dental hygienists. More of us need to be involved. We can't expect just a few of our leaders to be out there giving all the necessary time and energy for a task like this without an immense amount of support from grass-roots hygienists. I'm convinced that it will be there when they understand the situation. Communication is always a big problem in any organization, and the Canadian Dental Hygienists Association and the profession of dental hygiene are no different from any other group in this matter. We have to make sure that each province doesn't feel that it is fighting the regulation battle in isolation, that it has resources through the Canadian Dental Hygienists Association, and that there are models in other provinces which can be used. There are also people who have been through these very same kinds of exercises who would be

helpful and generous in assisting the development in other provinces. Dental hygiene in Canada has come of age. It's the time now for the regulation of dental hygiene to reflect that fact.

PROBE: Those are all good comments. As you mentioned, communication is always a problem. If we're going to get these "grass-roots" hygienists to come forth, to take part in leadership roles, what kind of message do we have to get to these people?

Marnie: First of all, I don't think we should be too hard on ourselves. The records show that the percentages of dental hygienists in Canada who belong to their professional organizations, is as good as any voluntary professional organization. We do have a significant body of dental hygienists in Canada and some of the present membership need to be groomed to be more active in the Association and to take over some of the leadership roles that many of us, who have been around for some time, are ready to relinquish. However, you are right; we do need to encourage dental hygienists who are not members of their provincial and national associations to become members and to become active in the affairs of the Association. I wish I had some magic answer to this. It's partly a matter of making sure that dental hygienists understand the issues and I think part of that understanding starts when they're students in dental hygiene. We're seeing, in many dental hygiene programs now, portions of the curriculum that are directed toward professional issues. This will help prepare students to face some of the issues since they'll be more cognizant of them and will have had an opportunity to discuss them, both with their colleagues as classmates, and their colleagues as instructors and educators.

PROBE: In order to have this effective leadership we must retain our pool of educated dental hygienists in Canada. Right now there is an ex-

odus of students to the U.S. Why are the potential students for dental hygiene going to the U.S. for their education?

Marnie: There's no question in my mind that this is related to the structure of dental hygiene education in Ontario. The people who organized that structure failed to recognize that dental assisting and dental hygiene are two both interesting and essential health occupations, but different. A dental hygienist is not a dental assistant who has taken a little more education. The structure of dental hygiene education in Ontario is such that potential hygienists must go through the dental assistant program and then practice as dental assistants prior to applying for dental hygiene, only to find the door closed. Some dental hygiene programs now have as many as 60 applicants for every position available and consequently people are becoming very discouraged. The overwhelming majority of Canadian dental hygiene students in the United States come from Ontario. Most of them are bitter about their inability to obtain their dental hygiene education in Canada and feel that they have invested a lot of time and money in a stream which they expected would flow to professional opportunity in dental hygiene, but in fact this was not the case. There are other reasons for dental hygienists seeking educational opportunities in the United States: such as availability of baccalaureate and master's level dental hygiene education. We need to develop baccalaureate programs in dental hygiene for Canada. The future needs for dental hygiene practice, and what it will entail, demand it.

PROBE: What would the ideal program be, for a dental hygiene student, upon entering an educational facility?

Marnie: With the caveat that I know the ideal is impossible, I think that the ideal environment

for dental hygiene education is within a faculty of dentistry. This is for both philosophical and economic reasons. I think either a baccalaureate program or a staged program which would enable people to complete a diploma level and then continue on, or return to complete a baccalaureate level, would be an ideal configuration for dental hygiene education in Canada. There is too much that we know now from research, in behavioural and basic sciences, and applied clinical research to think that we can do very much more in a diploma program, even two years in length, than prepare people who are safe entry-level clinical practitioners. The scope of dental hygiene has expanded beyond that. The needs in health promotion, the needs for work in hospitals and other extended care facilities, the needs for hygienists in research, the needs for hygienists to work with the healthy elderly as well as the elderly in residential facilities: all of these things are extremely important. I shall perhaps put in a plug for one of my favourite hobby horses here. We know from the demographic forecasts and epidemiological trends that one of the most significant problems in dental health is going to be keeping our seniors dentally healthy. We're going to have many more seniors and most of them will have their own teeth. There haven't been a lot of studies done on the oral health of seniors, but some of the work that's been coming out of Iowa and other places, where they've been doing some longitudinal studies indicate, for example, that caries rates for older adults are much higher than we thought they would be. They are actually close to the caries rates in adolescents. There is an awful lot to be done in caries prevention for older adults. There's an enormous amount of work to be done in periodontal disease prevention for older adults. Experts estimate

that about 80 per cent of all of the oral health needs of seniors can be encompassed in the work that's presently done by dental hygienists. Even if the scope of our practice did not expand, dental hygienists could look after 80 per



E. Brownstone presenting Marnie with plaque honouring the establishment of the M. Forgy Endowment Fund

cent of the needs of seniors, but they require a different group of skills and knowledge, such as understanding the interaction of drugs, the oral effects of medications, and a lot about the whole field of gerontology. We really must recognize this window of opportunity. If we miss this train we deserve to be left waiting at the station.

PROBE: Are you suggesting then, different stages or levels of education in dental hygiene that would take one from the basic clinical dental hygienist, after a two year diploma program, to either a specialty or expansion of the full scope of dental hygiene at the next level?

Marnie: Yes I am. The post-diploma level of education in dental hygiene must address both the areas you have mentioned. I think there must be some kind of general

expansion of scope, but we must also allow dental hygienists to specialize in certain areas, such as geriatrics, patients with special needs, hospital dental care, or education. Where are dental hygiene educators going to come from? We have no infrastructure to prepare dental hygiene educators in Canada, and yet we have a need for expanding dental hygiene programs. We're desperately short of qualified dental hygiene educators. We need to have that opportunity for specialization within a baccalaureate program. Certainly the areas of health promotion and community health are ones which need specialized training, and we must offer that to some of our dental hygienists as well.

PROBE: There's been much talk at this conference about the misnomer, Oral Health Promotion Specialists. It seems we should be known as Health Promotion Specialists.

Marnie: That's true. This reflects the fact that, as hygienists, we are much more aware than ever before of oral health's integral role in total health. For too long, partly because of the way health professionals in general have been educated in Canada and the United States, oral health has been considered a separate and, unfortunately, largely irrelevant aspect of total health. Now it's becoming increasingly recognized that it is an essential part of health and we must integrate our efforts with other health professionals: nurses, nutritionists, occupational and physical therapists, and pharmacists. We all have to work together in a broader context to ensure health. One of the most exciting developments in health in Canada recently has been the healthy communities movement. There are several Canadian communities that are involved in efforts to look at all of the structures and policies within their com-

munities in relationship to how they effect the health of the community. Dental hygiene has a big role to play in the healthy communities projects because what we are concerned with, primarily oral health, is part of the whole picture.

PROBE: Considering all of this; where do we start? What do we do first in our educational curriculum across the country?

Marnie: It's absolutely necessary that we offer hygienists the opportunity to further their education at the baccalaureate and the master's levels. In particular, we need university-based programs in dental hygiene which will offer baccalaureate programs. That's the first step in my estimation.

PROBE: Do we need to take the educational model for dental hygiene and standardize it across the country?

Marnie: Not necessarily. Several approaches are possible. I do think the present Ontario model is deficient. I give full credit to the dental hygienists themselves and to the educators in dental hygiene programs who have worked valiantly in Ontario to give the best possible education to dental hygiene students under the strained resources and circumstances in which they have had to operate. Dental hygiene, dental hygiene educators, and dentistry in Ontario wish that model to be changed and I hope the new legislation and its sequelae will allow for that necessary change. However, some variety in educational models, if they are sound, is possible and desirable.

PROBE: What resistance are we getting?

Marnie: The resistance in Ontario is a governmental one and, of course, any bureaucracy is resistant to change. In addition, it's just a rotten time to try to establish any new programs in universities. Universities are in need of better financing to maintain existing programs. It's a struggle: their

physical plants are going downhill and they are starved for funds. It's going to take some special efforts and recognition of the need for dental hygienists who have education at the baccalaureate level, to get some funding for such programs. There's no question that these programs have been recognized for their academic merit. Now we need to get the money.

PROBE: It's been suggested that the universities want to get rid of dental hygiene; they want us out of their program.

Marnie: No I think that's incorrect. I think that's a misconception. At the universities for which I have worked, I know that this is not true. However, small universities are looking at their ability to continue programs that are solely diploma-level programs, not only in dental hygiene but in other areas as well. At the University of British Columbia, which did in fact terminate its Diploma in Dental Hygiene program, they're trying to initiate a degree program now. I think that universities are primarily interested in degree-level and graduate and post-graduate programs in education, not in diploma-level programs. I see the role of the university-based programs as being somewhat different from that of the community college programs.

PROBE: In the Educators' Workshop here, prior to the Professional Conference, the facilitator illustrated a program in which the dental hygiene model was integrated with the dental model. It was my feeling that such a model would create a much more positive aspect to the collegial working relationship. What are your feelings on this?

Marnie: I think that's true, and we can extend that beyond dentistry and dental hygiene to all health fields. My educational experience as a teacher in dental hygiene has been in institutions where dentistry and dental hygiene co-exist and there have been good and bad

examples of collegiality development. It's sometime difficult, because you have to remember that dental students and dental hygiene students have their own sets of goals and priorities — the primary one is to graduate. We have to understand when we're sitting back as planners and curriculum developers, looking at the philosophical ideas about promoting collegial relationships between dental and dental hygiene students, that we have to incorporate some kind of pay off for them or they'll just shuffle it to the bottom of their list. It can be done and it is being done in some places: for example, at Dalhousie University the dental hygiene clinical program is well integrated into the clinical program of final-year dentistry, and students work very closely together in a relationship that reasonably approximates a practice setting.

PROBE: If we have good collegial relationships with dentistry, if we have good relationships as health co-professionals, then self-regulation becomes a non-issue. This is not the case at present. Why has this happened?

Marnie: Colligiality and self-regulation are separate issues. There's a fundamental sociological process concerning regulation. Because of the way dental hygiene has evolved in the United States and Canada, there is a power relationship between dentistry and dental hygiene. Dental boards, by and large, regulate dental hygiene. So we're looking here at not simply a recognition of worth or an attempt at a more collegial relationship, we're actually looking at the question of who has power. Dental hygiene is saying that it's time to assume the power to regulate our own profession. Any time there is a power struggle, regardless of the parties involved, the usurped group would be behaving against any kind of sociological norm if it didn't resist. As a consequence, although self-regulation for dental

hygiene is necessary and inevitable, in the mean-time there are going to be some tensions between dentistry and dental hygiene. I'm extremely concerned that these tensions, however unavoidable, do not escalate into a confrontational situation where we're at war with one another. That's not what dental hygiene wants. I don't believe it's what dentistry wants either.

PROBE: One of the purposes for self regulation is the desire to initiate practice standards and guard them with strict quality assurance. Would you care to comment on that?

Marnie: That's a very good point. It is now absolutely essential for professions which are self regulatory to have mechanisms in place to ensure quality assurance. This includes not only the continuing competence of its members, but also assurance that the standards of practice are adequate. We're extremely fortunate as Canadian dental hygienists to have a document that delineates the practice standards for clinical dental hygiene in Canada which was generated by, and content validated by, practicing dental hygienists in Canada. This is truly what dental hygienists say about their own practice and what they deem necessary in order to have quality of practice. These practice standards are realistic, they're attainable, and it's a document of which we can be very proud. The next step is to make sure that the practice standards are widely disseminated to hygienists in Canada and that we have an opportunity to help the dental hygienists work with them. The Canadian Dental Hygienists Association has been instrumental in this - it ran a series of Practice Standards Workshops this spring. These workshops will be closely evaluated to find out if, in fact, they make a difference. In the meantime, copies of the workshop materials are available from the



Roast for Marnie

Canadian Dental Hygienists Association's Central Office to any continuing education agency, component society, or constituent association in dental hygiene that wishes to provide Practice Standard Workshops for its members. Several requests for these materials have already been made, and it is obvious they are being put to good use.

PROBE: You've been instrumental in instituting many of these changes in dental hygiene and you have worked long and hard on, and with, the Canadian Dental Hygienists Association. You've played a role in the committees on Certification, Education, Continuing Education, Quality Assurance, and on the council for Education and Accreditation. What do you see Marnie, as your personal goal in the future of dental hygiene?

Marnie: I've been extremely fortunate in many aspects of my life: my personal life, with a wonderful marriage and a fine family; in my professional life, where I was ready at a time when opportunities presented themselves. I have had great fortune in my colleagues and I don't think that I could have chosen a better professional group to work with. Dental hygienists are

wonderful people, and student hygienists have kept me going all of these years, quite frankly. I hope that I can always be of some assistance, perhaps as a resource to the Association and to Canadian dental hygienists generally. I have a passion for education and I want to continue in this field. There is a need for educators not only in Canada but in other parts of the world as well. One conviction I hold when recognizing the good fortune in my own life, is an obligation to give something back. When I leave Canadian dental hygiene education formally, I intend to do some work with organizations such as CUSO, CIDA, WHO, or some other international organization where I can use the skills that I have been able to develop in my career in Canada.

PROBE: After being present, last evening, at the roast honouring you and listening to the satirical accolades of praise that you were given, I have to say you should be very satisfied with your life to date. Dental hygiene is very fortunate to have you in its past, present and future!



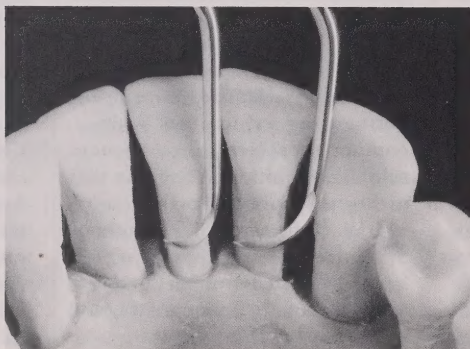
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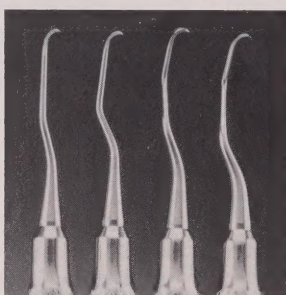
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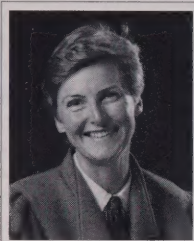
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Advancing the Art & Science of Dentistry.



Jane Fulton, MSc, PhD.
Assistant Professor, Strategic
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University of Ottawa

Sinking our Teeth into Public Policy

Social Trends and Issues Affecting Dental Health

A new theme at the World Health Organization has resulted from an examination of social trends and issues in health. It is called **healthy public policy**. A healthy public policy is a policy that considers health impact as an equally important outcome to other policy goals, and through which politicians accept responsibility for the health of the public. (Our goal is to bring health to the attention and agenda of policy makers.)

A **healthy public policy** is a coordinated action that leads to health, income, and social policies that foster greater equity.¹

Healthy public policy is achieved by taking advantage of opportunities to influence policy, while being aware of (and circumventing) economic and political barriers to our goals. We recognize that we cannot separate health from other social/personal goals.

Goals for Healthy Public Policy

"Above all, healthy public policy should be goal oriented and set clear targets which are regularly reviewed."²

When there are no specific goals for public policy, it is easy to put any policy in place. Once policies are assessed/evaluated in terms of

their impact on health as well as on industry/business/the economy, then choices may have to be made on which is more important: public interest or individual/special interest.

If these hard choices are not faced, for example, then it is easy to subsidize the growth and manufacture of tobacco while also committing research funds to the elimination of lung cancer. In order for nations to move ahead, rather than ride off in all directions, we need a consensus about goals. Our efforts should focus on making health a goal of all public policy.

Jurisdiction

Systematic building of healthy public policies should take place at all levels: international, national, regional and local.

In Canada, we are faced with continual disputes over jurisdictions for policy making; for example, federal and provincial governments can share a jurisdiction (e.g. transportation), or a problem can be multinational (e.g. acid rain). Thus anybody trying to achieve consensus faces a problem in someone else's jurisdiction.

One of the ways we try to cross jurisdictions is by using suasion (or persuasion), which J.K. Galbraith suggests is the most powerful tool in a democracy.

The Environment

Many factors in the environment impact on health generally, or influence a particular problem.

What policies are now in place that control the environmental factors which affect health? We look

beyond the health sector for examples:

- the selection of school teachers who support the mental health of children;
- clean air in the workplace;
- speed limits and the enforced use of seatbelts;
- the income and social assistance available to single mothers;
- immunization;
- the residential options available to the elderly; and
- prohibiting tobacco advertising.

Opportunities

What are the general mechanisms for influencing public policy? Examples include:

legal, economic, political, structural, educational, religious and organizational.

In addition to these general mechanisms, a number of *opportunities* exist that are not commonly perceived to be available for influencing policy.

At least five situations offer such opportunities:

1. when public consensus emerges (or strong public support for action) e.g. smoking limitation, community-based health services, dying with dignity;
2. changes in budget allocation, e.g. frame your problem to fit into the areas where the budget is available;
3. charismatic and competent leadership (political will);
4. a time of real or perceived crisis, e.g. AIDS, population aging; and
5. elections.

Factors or events which help us to *identify* these opportunities when they do occur:

- consumer demand or trends, opinion polls;
- intertemporal queue (timing, policy directions in a variety of sectors);
- media coverage; and
- announced cut-backs or funding opportunities.

Identify what resources we need; and find out if they are available to us.

We need to find advocates for change; create a message; and attract the attention of the public and the politicians.

For an issue to reach the policy arena, it often needs interest-group involvement in publicizing the problem and pressuring for change.

Determinants of Success:
factors which decide whether an initiative becomes policy:

- intensity of the lobbying – many fronts, many messengers;
- influence of the lobbying group(s) and messengers;
- commitment of the group(s) to the issue – be single minded if possible; focus on one objective;
- skillfulness of the lobbying group(s) and messengers;
- receptivity of community to the issue and the implications of changing the status quo;
- identification and neutralization of opponents;
- the willingness of the group(s) to help with technical and procedural problems, i.e. write good briefs, accumulate evidence, provide alternatives; and
- avoid recommendations that are too general, too “motherhood” and without details of implementation and expectations of outcome.

Social Trends and Issues that are Barriers to Healthy Public Policy

Economic:

- power of opponents – the economic power may be based in the political affiliation of

private interests; the economic vulnerability of populations, or control of the press (through ownership or advertising revenue).

Political:

- jurisdiction (e.g., producers of acid rain are not the recipients);
- short-time horizon of politicians, re-election may come first; and
- politicians with vested interests.

Personal:

- fear of entering someone else's domain;
- fear of accepting responsibility for outcomes in the political/social arena;
- fear of going against tradition; and
- unwillingness to deal with contentious and emotional issues.

Cultural:

- conventional wisdom – “fluoride is rat poison”; and
- rejection of family planning.

Procedural/technical:

- lack of understanding of the policy creation process;
- inability to be realistic and practical; and
- inadequate group dynamics skills.

Creating a Window of Opportunity
— getting healthy public policy on the agenda

Long-term strategies:

- outreach to policy makers to identify and explore possible routes for healthy public policy;
- education of the next generation of policy makers;
- develop and implement strategies for health impact studies; and
- educate the public, reduce fear of the unknown.

Short-term strategies:

- actively articulate a vision or outcome;

- generate consumer pressure through public education and lobbying;
- generate a unified message from all primary interest groups;
- deliver the message from multiple sources;
- recruit allies outside the primary interest groups;
- understand who controls the agenda, and deliver messages and pressure to them direct;
- ensure education and practical experience for those who work with you;
- develop unity of purpose among those people writing policy; and
- make your proposal politically attractive.

Consultation Towards Healthy Public Policy

Consultation leading to possible opportunities for healthy public policy has a number of intermediate gains or losses. (Adopted from M.C. Baetz (1986) York University.)

Benefits

1. It can provide a framework for planning, e.g. working group on health promotion at Health and Welfare Canada.
2. It can assist in structural reform, e.g. hospitals replaced by community health centres.
3. It can result in knowledge, understanding and plans for education of special groups, e.g. AIDS information, dental health for children.
4. It can focus opinion on possible success of specific programs.
5. It can increase tolerance for the views of others.
6. It can guide government policy makers.
7. It can strengthen the community-based infrastructure that is essential to the creation and implementation of most healthy public policy.

Dangers

1. It may allow power groups to strengthen their interests if there is public apathy about the issue.
2. It can be a public relations exercise.
3. It can delay government action.
4. It can allow manipulation or co-optation.
5. It can muddy the waters about the target of government action.

Creating Opportunities that Lead to Productive Outcomes

- Obtain constructive input from a variety of sources — positive and hostile.
- Identify a common source of a health problem.
- Identify issues and common concerns that exist over time.

- Get information from government of areas available for negotiation or initiative.
- Plan ahead, be proactive.
- Follow up.
- Try to make time to work on complex and controversial issues.
- Understand your own role and responsibilities.
- Try to make consultation continuous rather than episodic.

Avoid Co-optation

- Don't let politicians use consensus exercises for partisan purposes or public relations
- Don't let government misuse your recommendations to support their own policies/programs/actions without focus on healthy public policy.

Timing

A change of government can render useless recent progress on policy development. It can also be, however, an opportunity to put forward policies that might have been blocked by a previous government.

Footnotes

1. Ottawa Charter for Health Promotion
2. Health Promotion (1986) Vol. No. 4, p. 447

This presentation was made at the 11th International Symposium on Dental Hygiene, June 1989, Ottawa.

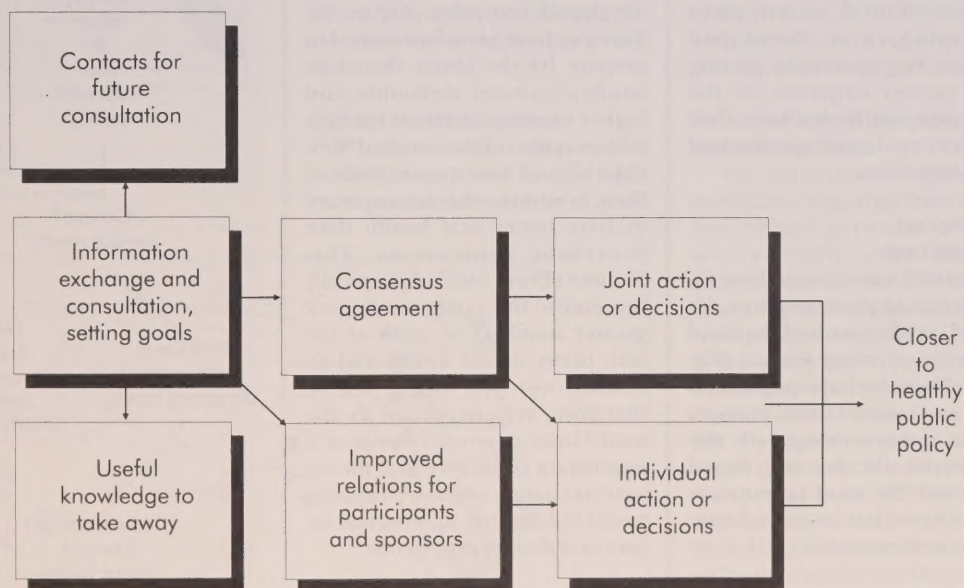


Figure 1. Beginning the healthy public policy consultation towards decision making. Adapted from Baetz (1986, York University Press)

Epidemiologic Trends and Dental Care Issues Relevant to Future Dental Hygiene

by D.W. Lewis, DDS, DDPH, MScD
Professor of Community Dentistry
and Director of Dental Care
Services & Epidemiology Research
Unit, Faculty of Dentistry,
University of Toronto

My primary role in the next 25 minutes is to predict what the dental disease picture will be like, say, 25 years from now, and how dental hygiene in much of the world will relate to this picture. Well, only fools and fortune tellers make predictions confidently. I am not a fortune-teller. Nor am I foolish enough to try to do this on a country-by-country basis, given the nature of this audience, the data and time available. Rather, I shall discuss the overall dental caries and periodontal situations in developing and developed countries very generally, placing much greater emphasis on the developed simply because they have more epidemiologic data and dental hygienists.

Epidemiologic and Demographic Trends

Insightful speculation about future dental hygiene requires the analysis, projection and eventual integration of many factors (Figure 1). These include: population trends and cohort effects; changes in the epidemiology of the periodontal diseases and dental caries; and the most appropriate types of providers to meet future service-need estimates.

Population Change

In developed countries the population is aging; there is an increasing proportion of older people over time, a trend that is expected to continue. In Canada,

for example, nearly one person in ten was over 65 years in 1981; it will be about one person in four in 2031. People born in succeeding decades are living longer, even though life-span — age at death — remains around 85 years. This combination has created an interesting phenomenon called rectangularization of survival (Figure 2). The successive groups seen in the survival curves of Figure 2 not only are living longer, and have many more teeth, they also have come through vastly different eras of dental technology, treatment philosophy and increasing use of dental services, particularly in the developed countries (Figure 3). Thus, we have been forewarned to prepare for the better dental attitudes, greater demands and higher expectations from the dental care system of the so-called "new elderly" and other ages. Each of these new birth cohorts is expected to have better oral health than preceding generations. This "cohort effect" which dynamically represents the compounding of greater numbers of years of life with better dental health and attitudes over this longer life is, therefore, very important to the total future treatment needs of a population (Figure 4). But, the extent and nature of these treatment needs will depend upon actual future oral disease experience.

The New Epidemiology of Dental Disease

The biggest change in dental epidemiology in developed countries is the well documented decline of dental caries in

children, probably due to the wide availability of fluorides. This drop of about 35-50% in dental caries prevalence apparently started in some countries during the 1950s.

On the other hand, children in many developing countries, especially those moving to urban

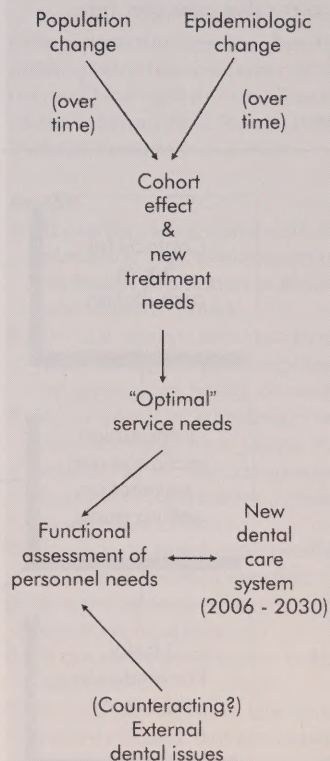


Figure 1.
Needs-based model for
assessing future personnel
requirements

centres and eating more refined carbohydrates, are experiencing more decay. There is some basis for optimism, however, as the caries rise has stabilized in some developing countries and reversed in others.

Another major change is increased knowledge about the pathogenesis of the periodontal diseases and the prevalence of severe periodontitis. The old view that untreated gingivitis invariably progressed into increasingly severe periodontitis with attachment loss and pocketing is not true.

Periodontal disease is now known to be very site-specific, episodic and difficult to predict. Some sites that seem to be very liable to further early destruction are surprisingly quiet for variable periods of time, whereas others unexpectedly display attachment loss.

The prevalence in developed countries of severe stages of periodontal disease in adults, characterized by pocketing and large attachment losses, is considerably lower than once believed, probably 7-15% or people. Surprisingly, this is also true in the developing countries.

Tooth Loss

The rate of edentulousness and numbers of missing teeth in dentate persons have declined in the developed countries. Some say that this will result in more severe periodontal disease and, consequently, greater root caries. However, the small proportion of adults just described as actually having severe destructive periodontal disease does not strongly support this view.

Optimal Dental Treatment

Whatever future disease and tooth loss levels may be, the treatment provided should be of good

quality, economic value and appropriate for patients' needs and circumstances. Treatment services that prevent, minimize and control dental disease are primarily important. Decisions about the frequency and content of professionally-administered treatment should be based on the good, high quality evidence arising from randomized clinical or community trials concerning efficacy or effectiveness, and on cost efficiency. Greater future consumer awareness of the range of available treatment options and of the appropriateness of different care-givers, including self-care, also is important.

The concerns about the need for using appropriate, effective and efficient dental services are particularly applicable to costly Western-style, high technology, professionally-driven dental care systems. In developing countries, emulation of such systems is unconscionable as several analysts have correctly pointed out, but not without a touch of dismay over what actually tends to happen and, possibly, what they fear will happen.

The Combined Impact of Demographic and Oral Disease Changes

The importance of shifts in the population's age distribution to future dental personnel requirements really only becomes quantifiably evident when age-group numbers are combined with anticipated changes in oral disease in that age-group to predict future treatment requirements. We shall examine some results from one of the recent studies using this combined approach. It covers the 30-year period from 1977 to 2006 in one developed country. Although its findings are generally consistent with other similar studies, the disease levels achieved and their timing will vary greatly among countries. The general trends however, are likely to be less variable.

One finding is that despite application of anticipated decreases

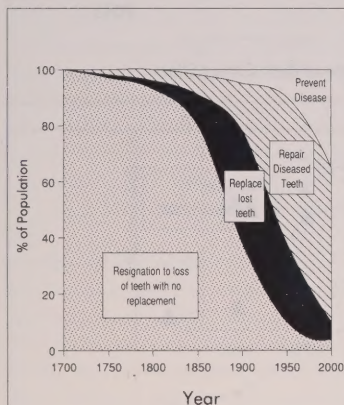


Figure 3. Diagrammatic portrayal of changing treatment attitudes

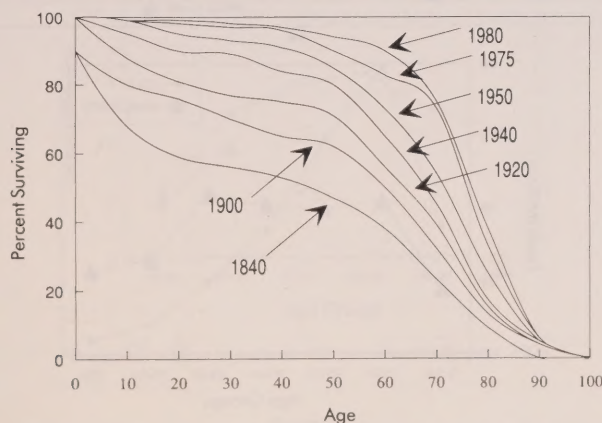


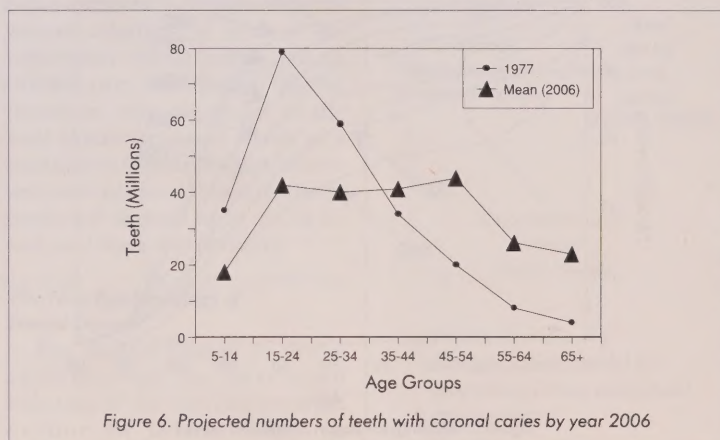
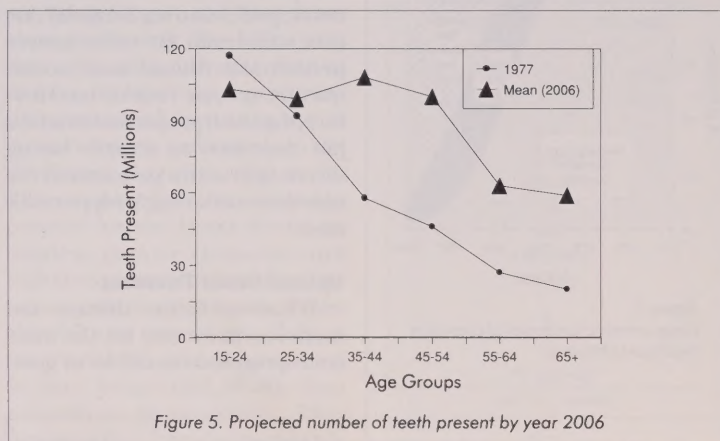
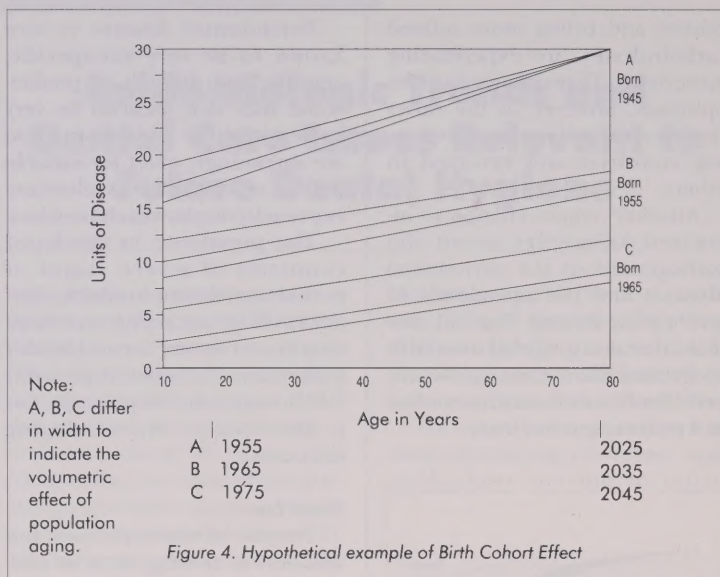
Figure 2. Rectangularization of survival curves

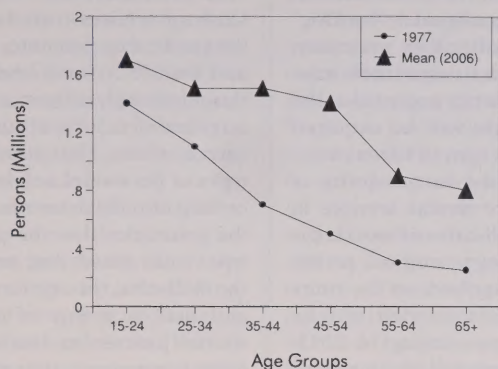
of 25-30% in the age-specific rate of edentulism, the overall number of edentulous persons in this country may increase between 1977 and 2006 by 15%. With such high declines in edentulous rates, an increase in the number of edentulous persons after 30 years is surprising. This is directly attributable to the powerful effect of population aging and demonstrates the essentiality of the combined approach when forecasting.

As anticipated, the number of retained teeth in 2006 may increase by 51% (Figure 5). This has great implications for personnel resource planning since some, and perhaps many, of these additional teeth will require professional care: that some will require treatment for coronal caries is seen in Figure 6.

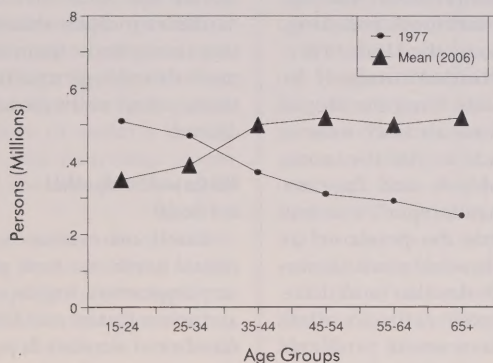
Although the overall estimated increase in the number of teeth with coronal caries in persons over age 4 is just 3% higher than in 1977, there are important age differences to note. Since those under 35 years old in 2006 may have 42% fewer teeth with coronal decay.

Projected differences in the distribution of periodontal disease in persons over 14 years old can be seen in Table 1. It is anticipated that the relative per cent of persons with severe gingivitis (14/15%) and periodontitis (21%) will change little between 1977 and 2006. The sole use, however, of relative percents is deceiving, because with greater tooth and personal longevity, the number of persons with severe gingivitis and periodontitis is estimated to increase by 32% and 45% respectively (remember the powerful effect of population aging). Again, the dental personnel implications are noteworthy as is the information that probably only 7-8% of the 21% reported as having periodontitis in this country have severe attachment loss and pocketing. Thus, about 27% (21% - 8% + 14%) of

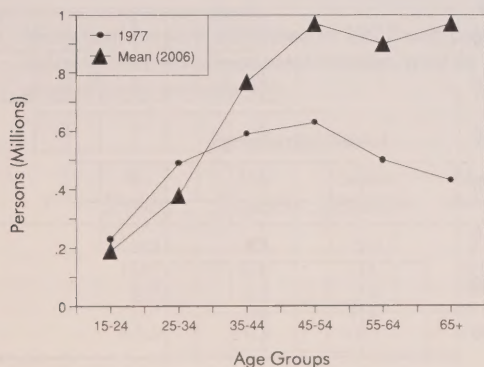




Projected number of persons with "O" periodontal disease by year 2006



Projected number of persons with severe gingivitis by year 2006



Projected number of persons with periodontitis by year 2006

Figure 7.

persons with these two worst categories of periodontal disease probably do *not* require sophisticated periodontal care. And, importantly, nearly two-thirds of persons in 2006 (34% + 31%) may have little or no periodontal disease so that only good self-care and minimal professional maintenance care may be needed (Table 1).

These projections for 2006 might reasonably describe the *probable* oral status situation in this particular country 17 years from now.

If the effect of the caries decline experienced by children that started around 1960, extends to adulthood and continues on to give diminished decay to all persons born since then, how extensive will the impact be in 2006? Partial, as Figure 8 shows, since only about one-half of the population in 2006 was born after 1960. The transitional period whereby the effect of the decline is increasingly evident continues until 2050 when nearly all persons would have been born since 1960.

As no studies, perhaps wisely, have attempted such far-reaching predictions, the best one can do is speculate very generally about the *possible* oral status situation in the transitional period beyond 2006 to, say, 2020 or 2030 when about three-quarters of the population would have been born after 1960. Extrapolation from the 2006 projections suggests the possibility of even lower needs for coronal restorations (as those under 35 in 2006, become over 35) and much less edentulism than in 2006 (as the decreased rate of edentulism finally works its way through the entire population). Although even greater tooth retention will be evident, it is unlikely that the percent distribution of periodontal disease types will change greatly. And if severe attachment loss continues to affect less than 10% of persons, the opportunities for root caries are minimized. Thus, the possible disease picture in 2030 represents

an even greater improvement over what was estimated for 2006; that is, reduced removable prosthetic and restorative needs, greater tooth retention (i.e., fewer extractions) and a greater *volume* of periodontal treatment needs that can mainly be met by judicious combinations of self- and professionally-provided prophylactic care. And children and older persons remaining at high risk to coronal and root caries, respectively, will need topical preventive applications to remineralize or seal potential lesions using today's technology, and probably much more advanced technology in 2030.

Rationalization of the types of dental personnel required

Given that these probable (2006) and possible (2030) disease estimates are reasonable, the optimal kinds of personnel required to satisfy treatment needs can be examined. A rational approach to the optimal use of human resources requires that each type of personnel be used to his/her maximum competency potential and that "functionalism" be adopted. Functionalism emphasizes the necessity of adapting the structure or design of anything to its function or purpose.

The idealized purpose of the dental care system is to encourage self-care and, otherwise, equitably provide truly needed and proven services at appropriate intervals that minimize and control dental illness. These services are intended to achieve and maintain the level of good functional and pain-free oral health status desired by the individual.

Since there will continue to be some decay, tooth loss, third molar impactions, malocclusion, fractures, accidents, deep periodontal pocketing and attachment loss, some specialized dentists to undertake the required work will be needed in 2030 and beyond. In the

earlier transitional phase such as 2006, many traditional "backlog" restorations will still be necessary. So dentists practising to their maximum competency potential at the foregoing tasks will be required soon after the turn of the century.

However, the vast majority of needed future dental services in addition to self-care will not be the high-technology, surgical procedures just described; so the number of dentists needed will be lower, perhaps starting in 2015. The main needs will be for educational services aimed at promoting more (and more effective) personal self-care, preventive applications, oral prophylaxis, scaling, root planing and tooth polishing. These are exactly the kinds of services now provided routinely by dental hygienists. Since the sites of much future care are likely to be at the workplace or in the community, at elderly and day-care centres or "health spas", it seems reasonable that the personnel at the sites should work independently of dentists and have extra diagnostic skills to allow referral of more severe problems to secondary and tertiary care dentists.

In summary, the volume and kinds of services truly needed by the public that promote, maintain and restore its oral health status should strongly influence the character and structure of future dental care systems. The numbers and types of personnel needed should be functionally determined, using the principles that the personnel types must match but not exceed the skills that the services require, and that each type of personnel should practise to his/her maximum competency potential. Consistent with these principles, projections of probable service needs for 2006 and possible service needs for 2030 in developed countries indicate that fewer dentists (as we know them today) and more dental hygienists (as we know them today) will eventually be required.

Will the world really unfold as it should?

Based on estimates of future dental needs, we have proposed a very important, highly specialized and select future role for a limited number of dentists. It is, however, a more centralized, smaller and less dominant role than today's.

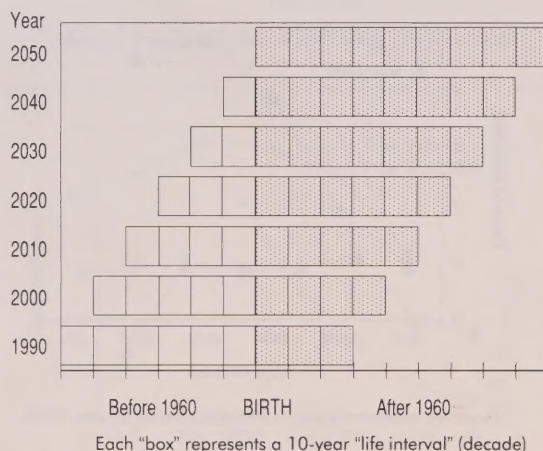


Figure 8. Transition of the population between 1990 and 2050 to post-1960 birth status

There is no reason to believe that dentists, their formal organizations and educational institutions when faced in say, 2015 with a diminished market for their services and, perhaps, prestige, economic viability and, for some, occupational survival will accept my conclusions or this role gladly. Nor should they without much introspection and study. Each occupational group, including dental hygiene, has self-serving and survivalist tendencies. Dentists after much reflection may decide that "functionalism" is not just an expanded "four letter" word and branch into two types. They might propose a smaller group having the high technology, specialized role that I foresee being needed, and a much larger group with a less specialized role that encompasses the activities of today's dental hygienists. And then what would you do and where do you think **you** would be?

There are other dental issues besides this dento-political reality that may impede the development of the rational *dental hygienist service* dominant model of care I think will be necessary. However, this is my fellow panelists' territory so I shall not comment further on them here.

A concluding commentary

Whatever happens, it will be an interesting time. To make it more enjoyable, I submit that this international organization of dental hygienists has very important informational, lobbying, research and co-ordinating roles to play in dental hygiene's future, even though what happens will do so differently and at a different speed in each country. Please act quickly and *always* with the public's best interests in mind. I urge you and your national member organizations not to ignore your role, and even your duty, to help ensure that our children and grandchildren will not inherit an irrational dental care system by default.

If I've alarmed you, I'm sorry; but I believe there will be a crisis in the developed countries if the present "dentist care" system perpetuates itself, without a major overhaul, into the next century. And to contemplate this happening in the developing countries, even on a modest scale, is obscene.

If it's of any comfort, I would like to close by telling you that the Mandarin Chinese character for the word "crisis" — which may have sounded like overkill when I just used it — is made up of two parts

which mean "danger" and "opportunity". So any threat you perceive in what I have said should merely be seen as a challenge to act proactively, constructively and quickly to ensure a rational oral health care system in the future.



This presentation was made at the 11th International Symposium on Dental Hygiene, June 1989, Ottawa.

TABLE 1. Millions of persons estimated in 1977 and projected in 2006 to have no periodontal disease, mild or severe gingivitis and periodontitis

Year	Periodontal Status				
	No Disease	Mild Gingivitis	Severe Gingivitis	Periodontitis	
2006	7.2 (34)*	6.5 (31)	2.9 (14)	4.5 (21)	(100)
1977	3.9 (26)*	5.6 (38)	2.2 (15)	3.1 (21)	(100)
Change	+3.3	+0.9	+0.7	+1.4	
% Increase of Change Relative to 1977	(+85%)	(+16%)	(+32%)	(+45%)	

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Policies, Politics and Economic Priorities: Issues for Dental Hygiene

by Catherine Fooks, BA, MA,
Research Co-ordinator (Health Policy) for the Centre of Health Economics and Policy Analysis,
Department of Clinical Epidemiology and Biostatistics,
McMaster University

Many public speakers begin their presentation with a well known tactic of owning up to gaps in their knowledge. This speaker is no different! The audience should be aware that I have absolutely no background in the field of dental hygiene. My only knowledge is a yearly visit to the dentist's office, where I spend most of my time with the hygienist — but it is the dentist who signs my insurance form! Second, much of the presentation is based on current initiatives in Ontario, the province with which I am most familiar. What follows, therefore, is a discussion of some political and economic trends based on a familiarity with the health policy environment in general, rather than an in-depth understanding of dental hygiene.

Furthermore, since the themes of the panel discussion are not oriented towards current practice, but rather to trends for the future, this presentation is not based on existing research evidence, but rather speculation on where we might be evolving.

Underlying the discussion are a number of assumptions.

These are:

- dental health is an essential component of overall health;
- dental hygiene is concerned with the prevention of oral dis-

ease and the promotion of oral health;

- dental hygiene has achieved professional status; and
- dental hygienists wish to become autonomous players in the health policy arena.

I have also kept in mind the instructions provided by the symposium organizers — to provide the audience with concepts to effect change for dental hygiene.

As the end of the decade fast approaches, our health care system is under increasing observation. Even the most cautious of commentators admit to a number of concerns:

- after two decades of a national health insurance program, Canadians still face many inequities in access to health services (particularly northern and native populations), inequalities in health status (particularly the poor),¹ and differences in the financing and delivery of services;²
- with health care budgets consuming as much as one third of provincial budgets,³ spending levels are being examined with an eye to cost control and quality of care. Policies such as no deficit financing for hospitals, greater emphasis on alternative delivery modalities for physician organization and financing, greater emphasis on community-based care, are all being considered by provincial ministries of health;
- the existing organization of the system has led to an institution-based, high-tech provision of services, much of which is not

evaluated against standards of efficacy or effectiveness;⁴ and

- we are unsure of the health care system's marginal impact on health — for example: which has a greater impact on health, increasing the health care budget or the budget for environmental clean-up?⁵

Within this context, dental hygiene faces a number of challenges for the future. At a time when some of our traditional thinking about health care, health and accepted medical practice is being re-examined, dental hygiene is emerging as an independent health profession.

Trends for Dental Hygiene

When analyzing health policy issues, it is often difficult to separate political, economic, social or consumer issues. What is economic is often social, which is often consumer-oriented, which is always political: for example, are manpower considerations an economic, political or social issue? The following discussion does not, therefore, consider political issues and economic issues as separate entities, but rather as interrelated. Consequently, the labels of legislative and regulatory trends, and financing and practice-setting trends, have been used. There are numerous issues which could be discussed under these headings; however, due to the limits of time and space, only a few major issues are highlighted under each. Figure One indicates the framework used in organizing this paper — that dental hygiene can use a number of strategies to face some of the

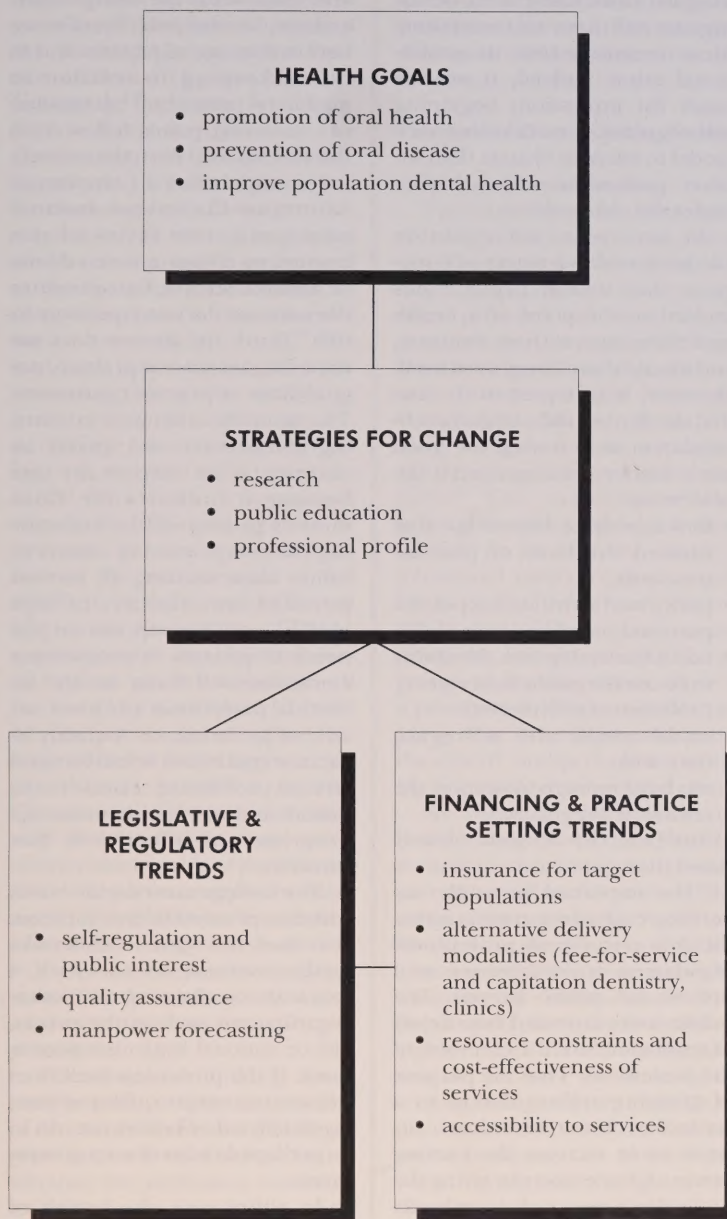


Figure 1. Dental Hygiene: trends for the future

trends in the health care field in order to meet its health goals as a profession. It should be noted that not all the issues listed in Figure One will be discussed in the presentation.

Legislative and Regulatory Trends

i) Self-Regulation and the Public Interest

For some time, dental hygienists called for an end to their regulation by dentists through the regulatory body of the dental profession.⁶ In Ontario, this is about to occur. The draft legislation in Ontario is worth reviewing as it may serve as a model for other jurisdictions, and it highlights a number of the issues dental hygiene will face in the future.

The Health Professions Legislation Review (Ontario) recommends that dental hygiene, previously regulated under the Health Disciplines Act, become a self-regulated profession. The suggested regulatory model provides for a Health Professions Procedural Code which outlines the organizational, legal and procedural provisions for all health professions, and a profession-specific Professional Act which will contain items relevant to each profession. In sum, a College of Dental Hygienists of Ontario will be established to oversee the registration, discipline, and continuing evaluation and education of dental hygienists in Ontario. This will include all matters related to standards of practice, educational qualifications and continuing competence programs, including defining the scope of practice for dental hygiene.⁷ A series of committees will be established to administer the various activities of the College (executive, registration, complaints, discipline, fitness to practice and continuing competence). Public accountability will be achieved by having members of the public sit on the Coun-

cil of the College, opening Council meetings to the public, including discipline hearings and complaint reviews, and by the College publishing the results of disciplinary decisions.

In establishing this new regulatory framework for 24 health professions, the Review stressed that its main objective was the protection of the public interest. The primary goals of the new system, as stated by the Review are:⁸

- a) the public must be protected from unqualified, incompetent and unfit health care providers;
- b) mechanisms must be in place to encourage the provision of high quality care;
- c) the public should have freedom of choice within a range of safe health care options; and
- d) there should be scope for evolution in the roles played by individual professions, and flexibility in how individual professionals can be utilized, so that the system operates with maximum efficiency.

All health professions must consider these goals alongside their own. Indeed, they may be similar; however, the College will be granted authority to regulate health professionals in order to protect the public interest, and not solely to further or promote the interests of the profession.

For all health professions, there is increased public involvement in the regulation of their professional activities, increased emphasis on ensuring the continuing competence of individual practitioners, and increased public exposure to disciplinary matters of Colleges. Ultimately, these new measures signal a shift in the legislative perception of self-regulation. Whereas, it was once an activity based on minimal supervision of individuals, usually in response to a complaint either by the public or funding agency, it is now the responsibility of a health

profession as a group to supervise the activities of all its members on a regular basis. Like others, dental hygiene will have to incorporate these measures into its professional ethos. Indeed, it may be easier for professions beginning self-regulation under this new model to adapt to change than for other professions with a history under the old model.

In some ways, self-regulation can be viewed as a victory as it suggests that dental hygiene has evolved to the point of a health profession separate from dentistry, and should therefore govern itself. However, it is important to note that the Review did not grant self-regulation as a reward for good work. Rather, it was granted if the profession:

- had a body of knowledge that formed the basis of practice standards;
- performed activities that posed a potential risk to patients;
- had a leadership with the ability to favour the public interest over professional self-interest;
- could comply with self-regulation; and
- was large enough to support the costs of self-regulation.⁹

Indeed, the Review clearly stated that:

"The important principle underlying each of the criteria is that the sole purpose of professional regulation is to advance and protect the public interest. The public is the intended beneficiary of regulation, not the members of the professions. Thus the purpose of granting self-regulation to a profession is not to enhance its status or to increase the earning power of its members by giving the profession a monopoly over the delivery of particular health services."¹⁰

ii) *Quality Assurance*
— *Competence and Quality of Care*

The draft legislation explicitly states the Colleges must establish a

Continuing Competence Committee "for the purpose of maintaining and enhancing the competence, and standards of practice, of members in the care of patients and in record-keeping in relation to members' practices."¹¹ A number of interesting points follow from this description. First, the committee is not labelled a Competence Assurance Committee because participants in the Review felt that continuing competence could not be assured. Second, the committee does not use the word quality in its title. Third, the Review does use the term *standards* of practice, not guidelines or practice parameters. The distinction between continuing competence and quality assurance is an important one because it indicates the Committee's priority will be maintaining the competence of members, rather than assuring all services provided are effective, of high quality, and appropriate to the needs of patients. A competence committee will focus on the individual practitioner and his or her level of performance. A quality assurance committee would focus on services provided in relation to the patient and whether they were appropriate and effective in that situation.

The College must decide how it wishes to proceed on this question. If it does not want to undertake quality assurance activities itself, it may wish to collaborate with other organizations such as the provincial or national hygienists associations. If the profession itself does not want to ensure quality of care, eventually other bodies may do so — perhaps dentists or even government.

In either case, the setting of practice standards is a necessary component of the process in order to measure competence and/or quality. For some health professions, establishing practice standards is thought to be an encroachment on the autonomy of

the profession. Some do not accept the need for *standards* but are willing to consider the development of *guidelines*.¹² Through the work of the Working Group on the Practice of Dental Hygiene, the Subcommittee on Research, and the Advisory Committee on the Development of Clinical Practice Standards, dental hygiene has developed a set of clinical practice standards for dental hygienists which can at a minimum be used as the basis for measurement of competence, and at a maximum be used to assess quality of care.¹³ The standards were developed after reviewing the quality assurance literature to determine an appropriate model for dental hygiene, and thus reflect an established framework of organizing standards under categories of structure, process and outcome. Indeed, the endorsement of the standards by the Canadian Dental Hygienists Association (CDHA) explicitly states that, "clinical dental hygiene practice standards will be used by Canadian dental hygienists to ensure that the highest level of dental hygiene care possible is provided to the Canadian public (quality of care) and that dental hygiene practitioners are capable of performing their roles in a competent manner."¹⁴ The CDHA has established a Committee on Quality Assurance in order to employ the practice standards in such a way as to evaluate the quality of care provided.

Therefore, in thinking about professional competence, quality of care, and the role of the College, some work will need to be done on whether the profession wishes to undertake maintaining competence only, or perhaps broadening its scope and setting up mechanisms to undertake quality assurance. A mechanism is already in place, in that outcome review is part of the profession's adopted clinical standards, thus enabling a

discussion of the appropriateness and quality of care provided. The question is whether or not the profession chooses to entertain the discussion and its consequent difficulties.

Finance and Practice Setting Trends

i) Financing Dental Services

Governments have been concerned at various points about providing basic dental coverage for target populations. Children are often provided with some dental services in the school,¹⁵ and beneficiaries of social assistance are often covered for basic services.¹⁶ The elderly, particularly those living in long-term care institutions, sometimes receive services.¹⁷ The majority of the population receiving regular dental care do so, however, under a job-related insurance plan or pay for it out of their own pockets. While it is unlikely governments would be willing to insure large groups of the population, there is a possibility they may consider target groups — children, the poor, the elderly, and perhaps the working poor without job-related plans.

As societal conceptions of health change and expand, dental services are becoming accepted as part of overall health. Indeed, the recent report of the Panel on Health Goals for Ontario included a recommendation to decrease the incidence of dental disease. The Report paid particular attention to children and the elderly because they do not have the financial or employment resources available to pay for needed services. Government insurance in some form would be necessary to guarantee these groups access to services.

ii) Alternative Delivery Modalities (ADMs)

There are a number of options available to both government and private sector employers in the financing of dental services —

traditional fee-for-service provision of care, capitation funding, global budgeting of clinics, working through existing community health centres and public health units.¹⁸ It is unclear at present how governments will proceed; however, it is safe to say that provincial ministries of health are already concerned over the open-ended nature of physician remuneration under a fee-for-service system. Alternative arrangements may be examined closely.

In particular, capitation plans have received great attention in the medical field and have begun to appear in dentistry.¹⁹ There has been a great deal of debate over capitation and fee-for-service plans, both for dental and medical care. In dentistry, the debate is hot and furious, particularly in Ontario where the Ontario Dentists' Association is waging a media campaign against capitation entitled, "No Dentists, No Cap."²⁰

The basic point of the debate is whether capitation encourages the provision of more preventive services than fee-for-service and, in the long run, decreases inappropriate or unnecessary use of the system. Whereas fee-for-service is thought to encourage practitioners and patients to use the system as much as possible, capitation is thought to do just the opposite, and therefore save money while providing quality care.

These claims are difficult to judge as there is a shortage of high quality research on the differences in *actual performance* in the two sectors both for medical and dental care. However, the idea of capitation holds a certain appeal for the payers of bills, whether government, employers or individual patients. In the context of spiralling health care costs, there is comfort in knowing, in advance, how much health services will cost per enrolled patient.

Both these trends, an increase in government insurance for target

populations and an interest in capitation plans, may increase the role of dental hygienists in delivering patient care. If governments are to provide new dollars for dental care, it is likely that in their current cost-conscious mode, they will want to ensure the cost-effectiveness of the services they are funding. A number of studies have established dental hygienists and other expanded duty auxiliaries as being technically competent to provide some of the care currently provided by higher income-earning dentists without a decrease in quality. If government is looking at ways to expand services, and employers are looking for ways to contain costs, alternatives to fee-for-service may look appealing. Consequently, dental hygiene may have an important role to play in developing these new models for providing care and once established, an important role in their success.

Development Strategies

In analyzing the issues facing dental hygiene, three strategies are suggested to focus thought and energy. All three are closely related and feed on one another in developing status as a profession. For discussion purposes, however, they have been separated as follows:

- a) research — questions of public policy;
- b) public education (includes general public, government, other health professionals); and
- c) professional profile — developing a public image as a health profession.

a) Research

While the development of a body of knowledge specific to the practice of dental hygiene is extremely important for the advancement of clinical expertise, it is also important to conduct research which is relevant to the broader context of policy development.

Many of the issues identified at the Conference on Dental Hygiene Research²¹ are not only relevant to dental hygiene but are applicable to other health care providers. Issues such as health promotion research, manpower studies, capitation-based payment for services, and utilization by the elderly are all topics of great interest to practitioners, researchers and government in general. Development of research questions, methods, and the promulgation of results, should be an important activity for dental hygiene. A number of potential areas follow:

Keeping Practice Standards Current

In order to keep the clinical standards effective in monitoring and enhancing the practice of dental hygiene, they must be kept current.²² For example:

- new development in services can be evaluated in light of cost-effectiveness and appropriateness standards;
- workplace relationships, including supervisory roles must be reviewed in light of self-regulation status; and
- changes in patient needs must be included in the practice of dental hygiene, based on reliable research evidence.

All of these developments should be reviewed in a rigorous and timely way, and incorporated into the clinical practice standards of dental hygiene when appropriate.

Investigate the Competence—Quality Assurance Debate

A number of problems arise for any profession attempting quality assurance and require research to solve them. First, defining quality of care, beyond questions of competence, is not just defining what is acceptable to peers but rather what is appropriate? In the medical field, a vast literature has been developed on: variations in surgical procedures, treatment

protocols, ordering of tests, and comparative lengths of stay in hospital. All the studies attempt to look at why there is such variation across, and among, geographical regions, physicians and hospitals, and ask why this is so. Any quality assurance activity will have to ask whether the care being provided is appropriate, as measured against agreed upon standards of appropriateness — not just accepted practice of the profession as present.

A second problem for achieving a quality assurance program is linking clinical policies to health outcome data. In other words, how do we measure whether the pattern of care provided over time improves health outcomes? Dental hygienists can presumably monitor the patients they see in their practice setting, but measures need to be established and monitored on an aggregate basis. A co-ordinating and analytical role may be needed.

Third, the fact that standards exist does not change practice.²³ Educational programs must accompany any clinical policy decision along with incentives to change practice. That is, once the policy is decided upon, and the standards are promulgated, a process other than relying on the individual conscience of the practitioner to change behavior is needed. Furthermore, the process has to be something more than distributing pamphlets on the standards.

Role of Dental Hygiene in Alternative Delivery Modalities

At present, it is unclear how dental hygiene will be affected by the emergence of alternative delivery modalities (clinics, capitation), other than it is likely dental hygienists will be employed in these practice settings. It is important for the profession to begin thinking about its performance within these developmental practice settings. Research into other

health care professionals and their role in these practice settings may be appropriate. Nurse practitioners, for example, already operate in some HSOs and CHCs.

b) Public Education

As dental hygiene develops, and its research base is expanded and improved, educating the public, the media, government, and other health care professionals will be paramount to the successful development of dental hygiene as an equal professional player in the political and economic arenas. Researchers often assume that once the research is complete and published in a respected academic journal, their job is done. However, for policy change to occur, individuals outside the research community must be made aware of, and understand, the research results. Some potential areas are mentioned below.

Dentistry and Dental Hygiene

The Government will educate the public about new regulatory mechanisms. Education about dental hygiene as a profession, separate from dentistry, will be the responsibility of the profession. The goals, objectives and standards of the profession must be communicated to the public in order for them to understand "dental hygiene", as opposed to "dentistry". As it becomes clear that regulatory agencies are there to protect the public, and that complaint and disciplinary reviews are open for scrutiny, interest in the profession and its activities may increase. The profession will need educational materials to meet that interest.

Furthermore, since preventive measures for oral health are written into the scope of practice standards, educational materials on dental hygiene for patients should be developed. Outcome review is part of the clinical standards for dental hygienists, and

some of it will depend upon patient self-care. Thus, it is important that public education is undertaken both at the individual patient and aggregate societal levels, and that it comes from the profession and not other allied groups or personnel.

Alternative Delivery Modalities

Public education will be needed about alternative practice settings. Whether in a job-related plan, government-funded plan or by oneself, the public will need to understand what it means to be a participant, the costs and benefits of participating, for both patient and system, and the fact that it is not yet clear whether alternative delivery modalities are successful in lowering costs and providing more preventive services. The dental profession is against the idea, and has already started its campaign of "no cap" by telling patients they will be forced to go to a dentist they don't like.²⁴ Dental hygienists may be in a good position to tell the other side of the story.

c) Professional Profile

In order to be viewed as a serious contributor to both health and policy development, a health care profession must have a positive profile as a professional group. Thoughtful consideration of the issues, consistency and unity in public debate, and the development of a voice as a profession, rather than as respected individuals, is important in creating credibility. Physicians and nurses have developed a public image of caring health professionals and patient advocates concerned about providing high quality care to the public. Dental hygiene can do the same.

Public Accountability

Developing a positive image is not always an easy task in the public policy arena. Numerous factors contribute to a professional

profile, many of which the profession cannot control. Creating a College that is perceived to be open, fair and accountable to the public, and developing clear public messages about the goals and objectives of dental hygiene and patient responsibility, are important steps in that process.

Political Presence

The profession also needs to develop a political presence, one that is credible to government, the media, other health care professionals, as well as the public. This presence will allow the profession to "sit at the table" with other health care players.²⁵ Being seen to promote effective, high quality services sends a strong message about the profession's commitment to the public. Again, quality assurance activities can contribute to this process as they provide evidence on the quality of care being provided.

Public Stance on Issues

In creating a public profile, the profession will have to develop policy stances on the various issues facing dental care in the future. Policies on issues such as public funding of dental services and capitation practices should be developed, so that the public knows where dental hygiene stands.

Conclusions

A number of issues have been highlighted as potential trends for dental hygiene: self-regulation, quality assurance, increased government insurance for target populations, and capitation funding. All present challenges for dental hygiene which must meet the demands of government, employers and the public.

There is little doubt that our health care system, and subsequently dental care, as we know it will change over the next decade. The regulation of all health profes-

sionals, previously thought to be a private affair, will involve the public. Regulatory bodies will not only have to appear to be accountable, they will be accountable. Health professions will no longer be able to rely on the individual conscience and competence of their members to provide quality health care. They will have to demonstrate that provision through formal evaluation programs undertaken on a regular basis. New methods of paying health professionals will be put in place, allowing for a multidisciplinary approach to health and health care. Dental hygiene, along with other health professions, will have to meet these challenges. As an outsider looking in, I see a profession ready and able to do just that.

Notes

1. Larry W. Chambers. *Health Profiles of the Citizens of Ontario. Health Objectives, Performance Indicators and Surveillance Techniques*. Ottawa: The Canadian Public Health Association, 1987:5.
2. There are differences in the funding of medical services across provincial fee codes. For example, not all provinces include in vitro fertilization in their fee schedules. The Alberta government recently de-insured a number of items such as family planning counselling and vasectomies. They were subsequently put back into the schedule.
3. Health expenditures were 33% of the Ontario Provincial budget for the fiscal year 1988/89. Ministry of Treasury and Economics. *1988 Ontario Budget*. Toronto: Queen's Printer of Ontario, 1988:71.
4. David Feeny. *Health Technology in Ontario. Report to the Ontario Health Review Panel*. Working Paper No. 7. Hamilton: Centre for Health Economics and Policy Analysis, June 1988.
5. The Canadian Institute for Advanced Research. *The Health of Populations and the Program in Population Health*. CIAR Population Health Publication No. 1. Toronto: Canadian Institute for Advanced Research, 1989.
6. The exception to this is the Province of Quebec where dental hygienists have had their own regulatory body since 1975.
7. The Professional Act defines the Scope of Practice for Dental Hygiene as "the assessment of teeth and adjacent tissues and treatment by preventive and therapeutic measures, and the provision of restorative and orthodontic procedures and services upon the order of a dentist".
8. Health Professions Legislative Review. *Striking A New Balance: A Blueprint for the Regulation of Ontario's Health Professions*. Toronto: Queen's Printer of Ontario, 1989:6.
9. Other criteria were: whether the profession's members were supervised by another regulated profession, and whether members were awarded a diploma or degree from a recognized Canadian post-secondary educational institution.
10. Health Professions Legislative Review, 1989:9.
11. Health Professions Legislation Review, 1989:97. The Committee will oversee the assessment of the College's membership in whatever fashion the Council of the College deems appropriate. Written or oral tests, site visits, continuing education and remediation programs are some of the approaches available.
12. Ontario Medical Association. *Statement on Clinical Guidelines*. Toronto: Ontario Medical Association, 1989.
13. Working Group on the Practice of Dental Hygiene. *Clinical Practice Standards for Dental Hygienists in Canada*. Report of the Working Group. Part Two. Ottawa: Minister of Supply and Services, 1988.
14. Working Group on the Practice of Dental Hygiene: v.
15. The Ontario Government instituted a program of dental insurance for children based on financial hardship in September 1987.
16. A recent report on Ontario's social assistance programmes stated that "many recipients are still denied basic dental care, access varies across the province and is generally limited to emergency assistance. Members of working poor families receive both basic and emergency dental care on a discretionary basis only. Social Assistance Review Committee. *Transitions*. Report of the Social Assistance Review Committee. Toronto. 1988:89.
17. Various governments in Ontario have promised some form of denticare for seniors since 1943. Recently, the Ontario Ministry of Health reconvened its Advisory Committee on Dental Care to examine the issue.
18. Capitation is defined as an arrangement in which the provider receives a monthly payment for each patient on his or her roster, despite the number of visits, made or not made, by each patient. Fee-for-service arrangements are those in which the practitioner bills a fee for each service provided to a patient during each visit.
19. The Ontario Government has committed itself to increasing the number of Health Service Organizations (HSOs) in the province and has funded a pilot project called a Comprehensive Health Organization where hospital and other health care services are included in the monthly capitation payment.
20. Bernard H. Dolansky. *President's Letter*. Toronto: The Ontario Dental Association, 1987.
21. *Proceedings of the Conference on Dental Hygiene Research*. Ottawa: Health and Welfare Canada, 1982.
22. This is one of the arguments used by the medical profession against the establishment of standards - keeping them current would be too difficult and would have malpractice implications.
23. A number of studies in the U.S. have indicated that distributing guidelines alone does not change behavior. Preliminary results from a study done at McMaster University (The Cesarean Section Implementation Project) indicate that after extensive educational interventions, the self-reported behavior of physicians indicated a drop in the number of cesarean sections being performed on women with a previous cesarean section; however, the actual rates have barely decreased at all.
24. D.C. Michaels. "Capitation is a threat to your freedom of choice." *Hamilton Mountain News*. 20 November 1985.
25. For example, the Ontario Government established a blue-ribbon panel of over 25 individuals to look at health strategy for the future. There are no dentists or dental hygienists on the panel (although the publisher of the Financial Post is).

This presentation was made at the 11th International Symposium on Dental Hygiene, June 1989, Ottawa.



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All manuscripts submitted for consideration for publication should be typed on standard (8 1/2 X 11) paper, double-spaced, with a margin allowance of at least one inch. Three copies should be sent to the Scientific Editor, and the manuscript must not be submitted to another publication while under review. A title page should be included stating the title of the paper and the author's full name, degree, and position.

Illustrations:

Illustrations must be clearly defined and suitable for reproduction on a reduced scale. Each picture should include a legend and should be marked in numerical order. Graphs and drawings should be drawn in Indian ink on white paper. Photographs must be glossy prints.

Length:

The preferred length of a text is 8-10 typed pages or 2,000 words including references. Space for illustrations should be considered in the length.

Subheadings:

It is suggested that subheadings be used within the paper for the reader's benefit.

References:

References should be lined up numerically. References to journal articles should be made as follows: last name of author followed by initials; title of article with only the initial letter of first word capitalized; full journal name followed by volume, number, first and last pages of article to which you refer, and year.

Example:

Bell, G. Role of the dental hygienist in restorative dentistry. Dental Health 40: 139-141, 1973.

References to books should be made as follows: last name of author followed by initials, title of book with initial letters of all words, except connecting words, capitalized; publisher; city of publication, year of publication; page or pages to which you refer.

Example:

Guthrie, H.A. Introductory Nutrition. The G.V. Mosby Co., St. Louis, 1975: 153-156.

Notice of Acceptance:

Manuscripts will be acknowledged upon receipt. Authors will be notified of acceptance of their paper before publication. Rejected manuscripts will be returned.

1990-1991 Membership

**Membership invoices were sent in September. If you do not receive your application, or for further information, please contact
CDHA Membership Line
1-800-267-5235**

ADVANCES IN PERIODONTAL RESEARCH

Although periodontal disease remains a considerable dental and health care problem in the USA, new research points to help on the horizon, according to a Feb. 8, 1990 review in *The New England Journal of Medicine*.

The report, written by Dr. Ray C. Williams of Harvard University dental school, states that much of the current research on preventing and treating periodontal diseases focuses on their specific causes and progression.

Ongoing research efforts aimed at earlier detection of the pathogens that cause periodontal disease are yielding results. Computer imaging techniques, enzyme and hormone level measurements in gingival crevicular fluid, DNA probes and bacteria characterization all aid in early diagnosis.

Other periodontal research trials are looking at the use of local antibiotics in reducing bacteria colonies in periodontal pockets, the role of host response in the progression of periodontal disease, wound-healing techniques to regenerate lost periodontal tissues and bone-grafting techniques.

The most common cause of tooth loss among American adults, periodontal disease affects nearly three out of four people according to the American Academy of Periodontology.

ASPIRIN SHOWN TO INCREASE POST-OPERATIVE FACIAL SWELLING

A recent study has revealed that aspirin, known to be an anti-inflammatory drug, actually increased post-operative facial swelling of patients who underwent third molar extraction.

Researchers at the University of New Jersey School of Medicine and Dentistry (UMDNJ) conducted research to compare the effects of aspirin (ASA) and acetaminophen (ACET) alone and combined with methylprednisolone (MPRED) on facial swelling, trismus and the need for additional medication following surgery. Fifty patients who underwent the removal of at least one impacted mandibular third molar were the subjects of the placebo-controlled, double-blind, randomized clinical trial.

Swelling was volumetrically evaluated using a Facial Plethysmograph to measure facial contours pre-operatively and then 48 and 96 hours post-operatively. Maximum inter-incisal distance was measured to determine trismus. Daily consumption of propoxyphene was also evaluated as a back-up analgesic.

The results of this research demonstrated that aspirin alone significantly increases post-operative facial swelling as compared to a placebo, while acetaminophen alone had a negligible effect on swelling. Methylprednisolone, when combined with aspirin and acetaminophen, showed a significant effect on the reduction of facial swelling. No significant differences in trismus or the need for

additional medication were demonstrated.

The use of a Facial Plethysmograph contributes toward the validity of this study, according to UMDNJ's Dr. Maano Milles. Its developers claim it is 95 percent accurate in defining volume changes, which is a major improvement over previous measurement techniques. Dr. Milles believes that the Plethysmograph offers a promising experimental model in which to study the effects of other anti-inflammatory drugs.

CONSUMER PERCEPTION OF "STICKY" FOODS DOES NOT CORRESPOND TO ACTUAL RETENTION TIMES

An investigation into consumer perception of food "stickiness" and actual retention of food on teeth has identified a lack of correlation between the two. The belief that all "sticky", "chewy" foods cling to teeth and facilitate the caries process is prevalent among consumers, yet the results of this study should help to dispel that myth by demonstrating that certain "sticky" foods actually clear the mouth rapidly.

It was found that consumers associate "sticky" or "chewy" foods with a high rate of caries, partly because some practitioners advise that "sticky" or "clingy" foods pose a serious threat to dental health and should be avoided.

The rationale behind this is that retained foods provide a prolonged supply of fermentable carbohydrates to plaque micro-

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Oral-B

organisms and can enhance caries development.

Researchers at the Forsyth Dental Center in Boston conducted studies with consumers to compare their perceptions of food "stickiness" with actual measurements of food retention on teeth. To evaluate actual retention times of various foods on teeth, five subjects were given measured amounts of 21 foods. These included caramels, jelly beans, chocolate bars, peanut butter crackers, assorted cookies, cereals, fruits, breads and pastries. Food particles remaining on all premolars and first molars were removed either immediately after the last swallow or periodically thereafter. The residues were lyophilized, weighed and assayed for carbohydrate.

A previous, separate study consisted of 300 randomly selected consumers who rated the same foods for degree of "stickiness" on a scale of one to ten.

The results of these studies demonstrated that there is a lack of correlation between calculated food clearance rates and consumers' subjective ratings of food "stickiness". Certain foods that consumers rated as most "sticky" (caramels, jelly beans and chocolate bars) actually cleared from the mouth faster than foods that were rated less "sticky" (crackers, potato chips and cereal). It was also shown that the carbohydrate content of most retained food particles was unchanged from that in the original form of food.

According to Dr. Shelby Kashket of Forsyth Dental Center, the results of this study point to the need for consumer education on proper food selection with respect to dental health. "To be of genuine value, advice concerning food 'stickiness' requires that dentally-relevant information about food retention be made available to the consumer," said Dr. Kashket.

In errata

Abstract:

Preparing Dental Hygiene Students in the Treatment of Periodontal Disease

L. Kraemer, RDH, PhD and J. Gurenlian RDH, MS, Thomas Jefferson University, Philadelphia.

Periodontal disease is the leading cause of tooth loss. Experts agree prevention is crucial with frequent and thorough plaque removal being the best method currently for preventing periodontal disease. Since it is the dental hygienist who plays the major role in providing such care, it is imperative that dental hygiene programs educate students in the prevention and treatment of periodontal disease and provide the necessary breadth and depth in theory and clinical experience in the curriculum. The purpose of this presentation is to describe an educational model designed to enhance the treatment phase of the periodontal component of the curriculum for prelicensure and post-certificate dental hygiene students. Both the didactic and clinical components of the periodontics courses are built upon a program planning model: students assess, plan, implement and evaluate the periodontal needs of all patients. Case presentations also permit students to assimilate and analyze clinical data while internalizing the importance of comprehensive care and adequate follow-up. In general, the program planning model in periodontics incorporates the application of theory to practice and enhances clinical decision-making skills needed for graduates to meet the complexity of periodontal health needs on a world-wide basis.

Note: This abstract was omitted from the International Symposium Issue Vol 25, No 5.



In the summer issue of *Probe* (Micro-organisms), there appeared an article by Thomas Rams and Jorgen Slots, *The Subgingival Microflora as a Determinant in Periodontal Disease Treatment Planning* (page 89). Please note the correction; Dr. Rams is on the **left** of the picture and Dr. Slots is on the **right**. Our apologies for any confusion this may have caused.



In the spring issue of *Probe* (Dental Implants), there appeared, on page 46, a self-assessment test on histology. We stand corrected and acknowledge that it was submitted by Diane Moore from the Wascana Campus of SIAST, Regina, Saskatchewan. Please accept our apologies for this error.



On page 69 of the summer edition of *Probe*, in the article entitled *What is "Portability"*, under the sub-heading **Why do we want Portability?** d) should read "**not one** of the provinces re-examines practitioners who stay in the province;..."

Under the sub-heading **How will the process work?** b) should read "the Clinical **Outcomes** Review and Evaluation Process..."

We regret any confusion this may have caused.



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2. Assist in the development of work plans for achieving goals for oral health that were established in 1986, and goals for dental training that continue to be set.
3. Assist the tutors to administer aspects of the Canada Mozambique Dental Project that are theirs to carry out in Mozambique.
4. Regularly visit sites where practicals are to occur, assess work discrepancies, recommend and provide continuing education.
5. Provide primary care at practical sites with dental persons in charge with course participants.

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Attn: Myrna Frizell, President
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Fifty (50) words or less, per ad, minimum \$25.00. Each additional word 50¢. Payment must accompany order or ad will not be placed. Closing date for receipt of copy is first of month preceding month of publication — February 1 for Spring issue, May 1 for summer issue, August 1 for Fall issue and November 1 for Winter issue. Display classified rates based on 1/2 page (\$400.00) and 1/4 page (\$200.00) only. Non cancellable after closing date. No agency commissions on classified advertising. Ads will not be taken by telephone. Direct advertising copy, with cheque to:

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Speakers' Bureau

CDHA is calling for speakers to facilitate workshops on professional development. The purpose of the Speakers' Bureau is to form a resource of individuals who would be willing to lead sessions for the dental hygiene associations, allied health professional associations and others. All professionals and topics are welcomed. For example: health care analysis, wellness and health promotion, financial planning, nutrition, forensics, etc. Send your name and area of interest or specific expertise (as well as any suggestion of others) to:

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[†] Supragingival Calculus Formation Study: "A Study to Compare the Effects of Two Dentifrice Products on Adult Supragingival Dental Calculus Formation" 1989. Data on file, SmithKline Beecham Canada.

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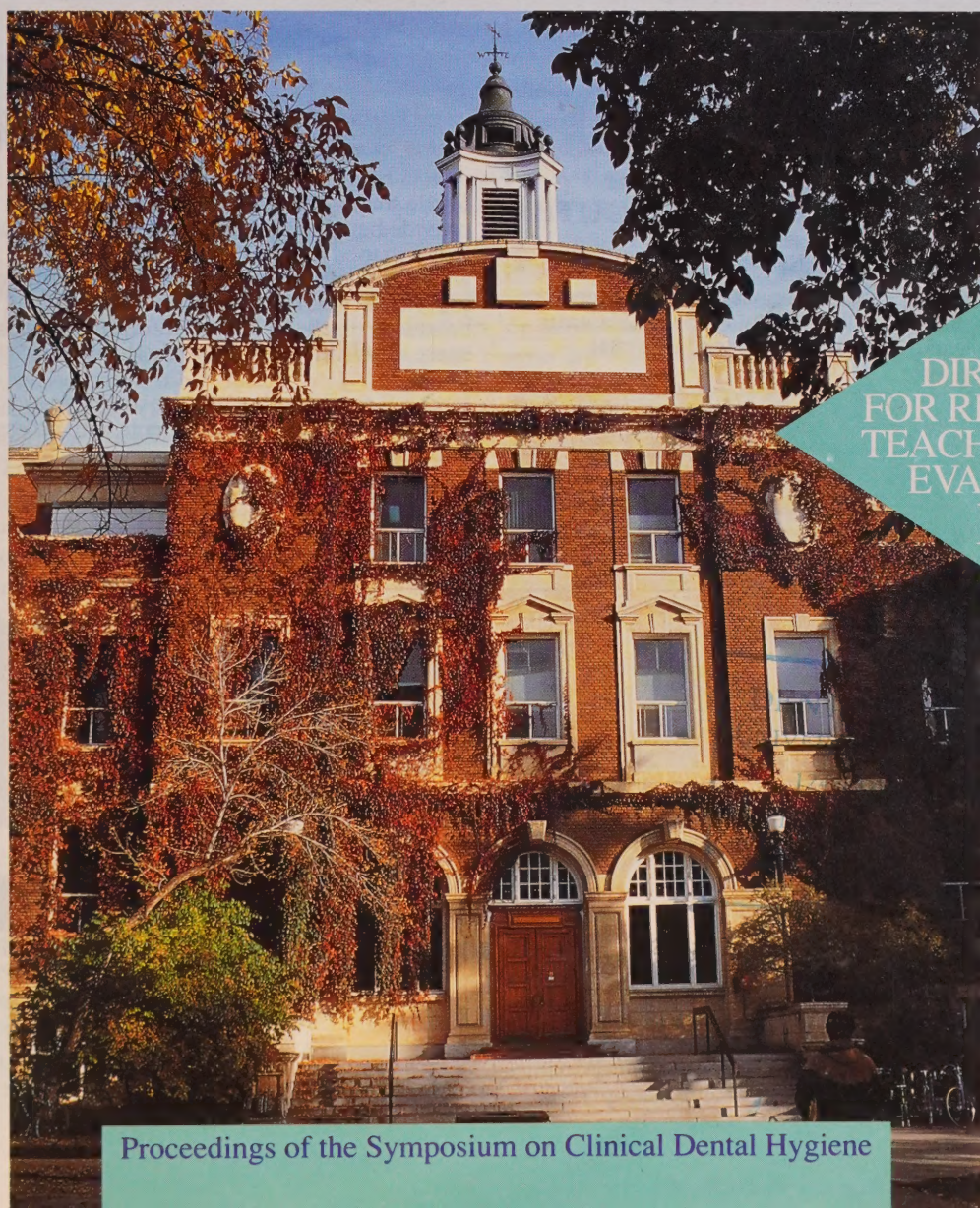
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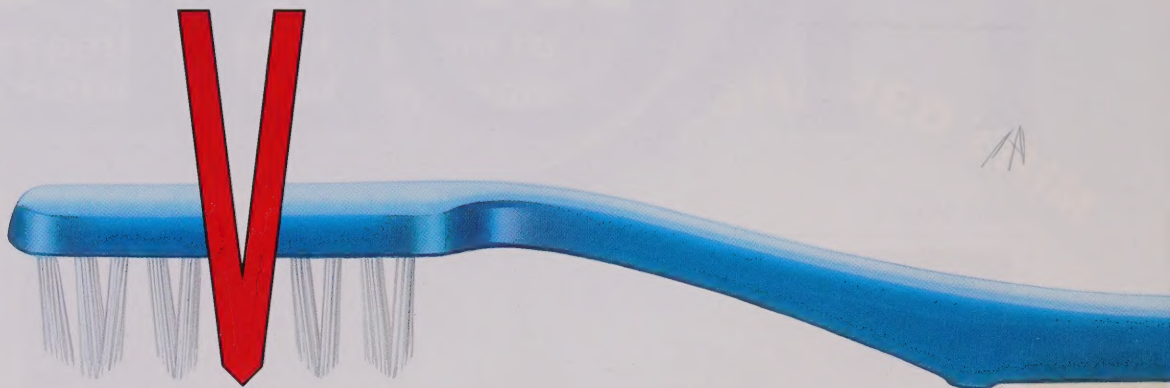
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DIRECTIONS
FOR RESEARCH
TEACHING AND
EVALUATION
PART I

Proceedings of the Symposium on Clinical Dental Hygiene

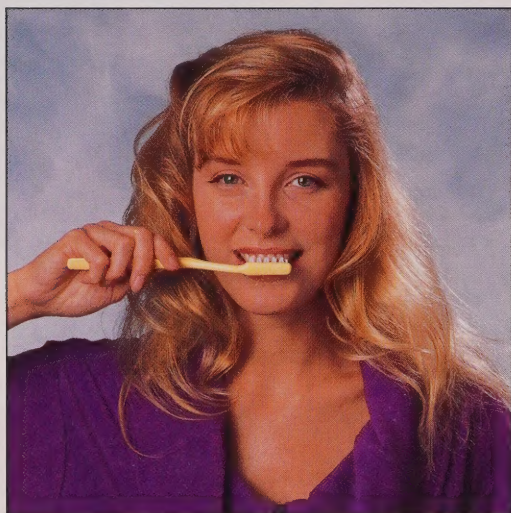
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President's Message



Myrna Frizell
President

A recent letter from a member of our Association has prompted me to give some thought to an issue which was very obviously upsetting to this individual. It has also been a common topic of concern amongst the dental hygienists I have met during my presidential visits over the past year.

The writer expressed her concern that *"the CDHA does (not do) enough for dental hygienists with regard to the illegal hiring of dental assistants to do a hygienist's job. The general public, due to the lack of information, does not know that it is illegal. They have faith that their dentist would never sanction such a thing!"*

(Her community) has a lot of this going on. The dentists say that it isn't and that they can't get hygienists, but what ethical hygienist would work in this situation. Also what hygienist would speak up when she has to challenge the dental community and jeopardize her job, presently and in the future.

"Why can't something be done as an association?" she asks.

My answer to this question is multifaceted. A solution to the problem of the illegal practice of dental hygiene will come from no one group or approach, but rather through the combined responsibilities, initiatives and

support of the CDHA, provincial associations, governments, licensing bodies, and individuals.

Provincial government regulations define who may practice dental hygiene, and licensing bodies are responsible for the registration and licensure of those individuals who meet the requirements and are eligible to practice in that province. When the licensing body for dental hygienists is the provincial dental association or college of dentists, there is the potential for a conflict of interest. Provincial governments are recognizing that it may not be in the best interests of the public to have this kind of control by one profession over another, and are supporting self-regulation of the profession of dental hygiene. Ontario and Alberta are recent examples of this.

With self-regulation, it will be dental hygienists who will be responsible for ensuring that only those individuals who meet the requirements of the regulations will be registered and licensed to practice as dental hygienists. With self-regulation it will also be dental hygienists who will have the responsibility to discipline and to pursue the illegal practice of the profession.

Appropriately, CDHA as a national association does not have an active role in provincial practice and regulation issues. However, the CDHA Practice and Regulation Council does provide support to provincial associations who are addressing licensing and regulatory concerns. Resources are available from CDHA to assist provincial associations with government relations, lobbying, and political initiatives.

Our National Dental Hygiene Campaign provides an opportunity to promote the profession of dental hygiene

and the role of the dental hygienist in oral health care. This promotion, whether at the national, provincial, local or individual level, enables the public to become more knowledgeable consumers of oral health services. With increased public awareness will come a demand for dental hygiene services, provided by licensed dental hygienists.

Each of us, as a professional and ethical dental hygienist must make a commitment to addressing the issue of illegal practice as well. We can contribute to the awareness of the public by participating in promotional activities in our communities. We can hang our diplomas and certificates in our offices where the public can see them, and we can wear a name tag which identifies us as a Registered Dental Hygienist. Challenging the dental community and possibly jeopardizing job opportunities will become less of a concern as self-regulation becomes a reality for more of the dental hygiene profession across Canada.

As President, I am pleased to receive letters from members letting me know how they feel about what CDHA is doing. The Association's planning process that has been evolving for the past several years is based on meeting identified needs and priorities. Input from individual members is important to this process, providing opportunity to assess and evaluate what we do on behalf of our members and in the interest of the health of the public we all serve. ■



What's all the chatter about Trident with Xylitol?

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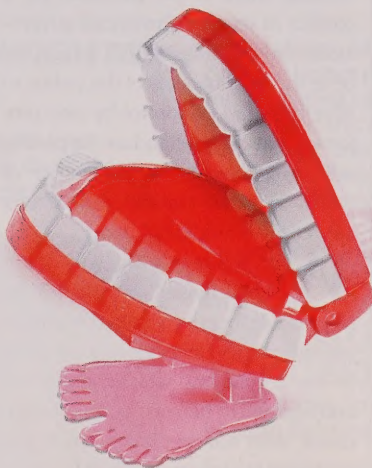
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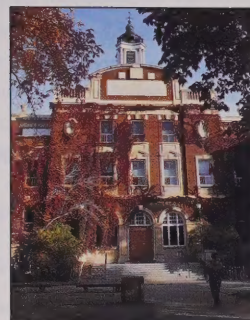
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Bridging the Gap — Yes, We Can!

Janice F. L. Pimlott, DipDH, BScD, MSc
and Barbara A. Zier, DipDH, BEd, MEd



Janice F. L.
Pimlott



Barbara A.
Zier

Co-ordinating the 1990 Symposium on Clinical Dental Hygiene provided a unique and privileged perspective from which to consider the relationship between research and professionalization. An early task was to choose a conference title. The Symposium on Clinical Dental Hygiene: Directions for Research, Teaching and Evaluation captured our commitment at the University of Alberta to the importance of the topic and its inter-related components. The appeal of this title became apparent as potential speakers were contacted and abstracts submitted. The theme of the Symposium emphasized the relationship between clinical dental hygiene research, clinical education and enhanced dental hygiene practice. The focus of this editorial is on the importance of bridging the gap between research and practice. Our practice must become research-based if dental hygiene is to become a true profession.

Increasing numbers of dental hygienists are realizing the potential that research holds for them. Beyond seeking out the literature generated by other disciplines, they are initiating research activities that they conduct either by themselves, with colleagues or researchers in educational settings. In the process, these clinicians are learning that they can actually find the time, information, and resources to conduct research. Ultimately, they learn that increased knowledge of their profession and increased control over that knowledge base can build feelings of competence and professional empowerment. The challenge is to extend these initiatives and make the integration of research and practice the norm rather than the exception.¹ Symposia such as this one are a means to demystify research by encouraging dental hygienists' increased familiarity with our professional knowledge base, participation in inquiry, and collegiality.

To become familiar with the existing knowledge base, dental hygienists must approach the task as professionals expanding their own expertise, not like students simply fulfilling an assignment. Probably the greatest value of research is in its extension of the body of knowledge that can be used by the practitioner. Michelle Darby explains:

"Research also enables us to define the scientific basis underlying dental hygiene practice and it makes us more certain about the purpose and outcome of our services. We can, as a result, be more confident practitioners. Moreover, knowledge derived from research will enable dental hygiene to move toward the acquisition of full professional status."²

Dental hygienists also need to expand their perception of themselves to include the role of inquiring professionals. Dental hygiene inquiry originates from different sources. One is research which begins outside the dental hygiene practice among people who are detached from the daily problems of practice. Another is "action research" which, in contrast, is conducted by a group or individual engaged in practice and is, as well, a solution-oriented investigation. Irrespective of the source, all research begins with a question. Dental hygienists with questions and seeking answers for them, already have what they need to begin the process of inquiry.¹

The difference between professional dental hygiene researchers and professional dental hygiene practitioners lies in the point of origin of the question. Dental hygienists-as-researchers originate their own questions and take them seriously enough to seek their own answers. They may do this individually or collectively, through methods that are compatible with their work. They may also choose to do so in collaboration with researchers who are willing to combine their own expertise with that of the practitioners.

Inherent in all these ideas is the need for dental hygienists to develop collegial relationships in the workplace and beyond. Dental hygienists in collegial groups can reflect upon their profession, gain increased knowledge about their field, and engage in inquiry. It is difficult for a dental hygienist to do this alone.

We urge dental hygienists to become research-minded — to be alert not only to how research can inform

their own practice but also to ways in which their own observations might contribute to the continuing expansion and dissemination of knowledge essential to progress. Consider the negative examples of a dental hygienist who uses old techniques which have never been scientifically validated or the dental hygienist who uses new data before sufficient verification. The ideal practitioner operates somewhere between these two extremes. So that the latter situation prevails, dental hygiene practice needs to become research-based. The underlying assumption of this position is that all dental hygienists should demonstrate an appreciation of research and apply relevant literature and research as support to practice.³

As a minimum, dental hygienists need to consider the purpose and place of research in professional practice and

be convinced that dental hygiene research does provide sound information on which to base changes for the improvement of client care. They must be able to objectively question dental hygiene interventions and to generate researchable dental hygiene questions. Dental hygienists should also be prepared to participate as team members in the testing and replication of research studies in practice settings.³

Clearly, if a "dental hygiene science" is to evolve and if dental hygiene research is to be integrated into practice, there must be involvement between dental hygiene educators, researchers and practitioners. This collaboration begins with recognition and understanding of the importance, purpose, and place of research in professional practice. We encourage dental hygienists while reading the contributions to

this collection of Symposium papers to reflect on the ideas that were presented and to continue to grow in their dental hygiene commitment. Let us continue to be reminded that research will enable dental hygiene to generate and refine the knowledge base needed for effective practice; in fact, "dental hygiene practice will be only as good as the research and theory base that supports it".² ■

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Dear Editor

In my paper 'Epidemiologic Trends in Dental Care Issues Relevant to Future Dental Hygiene' published in the vol. 24, Autumn 1990 issue of *Probe*, I unfortunately neglected to give credit to a former graduate student of mine when the table and figures were redone for publication. Table 1 and Figures 5, 6 and 7 were adapted from data contained in I. Bruce's 1988 MSc thesis at the University of Toronto, entitled "Epidemiologic Aspects of Developing a Preventive Dental Strategy for Canadians". My apologies to Dr. Bruce and the Journal.

Yours sincerely,
D.W. Lewis, DDS, DDPH, MScD, FRCD(C)
Professor of Community Dentistry
University of Toronto

Symposium Program

Wednesday, June 27, 1990

5:00 - 7:30 pm

7:30 pm

Registration

Welcoming Reception

Thursday, June 28, 1990

8:00 - 8:30 am

8:30 am

8:45 am

Registration

Opening Remarks: B. Zier & J. Pimlott

Keynote Address: "Dental Hygiene Research: Issues and Challenges of the Next Decade"
D. Bowen

9:30 - 10:00 am

10:00 - 10:15 am

10:15 am

"A Research Paradigm in an Emerging Discipline" J. Kerr

Break

Trigger Presentation: "Toward the Development of a Conceptual Framework for the
Dental Hygiene Profession" M. Walsh

Reactor Panel

P. Johnson

D. Bowen

I. Woodall

11:30 am

12:15 - 1:30 pm

1:30 - 4:30 pm

Plenary Group Discussion

Lunch

Workshop Sessions

- 1) Clinical Dental Hygiene Therapeutic Modalities and Technology
- 2) Dental Hygiene Practice, Regulation and Quality Assurance
- 3) Epidemiology, Community Disease Prevention and Oral Health Promotion
- 4) Dental Hygiene Education, Curriculum, Clinical Teaching and Evaluation

Friday, June 29, 1990

9:00 - 10 am

10:00 - 11:45 am

11:45 - 1:00 pm

1:00 - 3:00 pm

3:30 pm

Continental Breakfast & Posters

Paper Presentations

Lunch

Working Group Reports

Closing Remarks: B. Zier & J. Pimlott

Keynote Address

"Dental Hygiene Research: Issues and Challenges of the Next Decade"

Presented by:

*Denise M. Bowen, RDH, MS
Associate Professor in Dental Hygiene
Idaho State University*



Denise Bowen

Dental Hygiene Research: Issues and Challenges of the Next Decade

It is exciting for me to be able to participate in this Symposium on Clinical Dental Hygiene. As you may be aware, I have been involved for many years in speaking about the importance of research to the emerging discipline of dental hygiene. This symposium, however, is unique because its purpose is to focus on linking dental hygiene research, teaching, and clinical practice. We, as participants over the next two days, will be able to plan for the future while examining mechanisms for developing the knowledge base which will be necessary for the delivery of innovative dental hygiene services to society in the twenty-first century.

We have all heard that "research is the hallmark of a true profession"¹ and that a true profession "constantly expands its body of knowledge through research".² It also is common knowledge that research, and the development of a sound theoretical base, will allow dental hygiene to emerge from a developing profession to true professional status. Some dental hygienists are offended by these statements because it is assumed that the fact that dental hygiene is not recognized as a true profession means that its members are not "professionals". Let me assure you that this is not the case. The term "professional" refers to an individual's behaviour and adherence to an established code of ethics. Thus, as dental hygienists, we can be professional in our practice and in our teaching despite the fact that the discipline of dental hygiene is still in its developmental stages. Conversely, individual members of the true professions, such as medicine and law, may or may not be professional in the conduct of their work.

Research, of course, provides the foundation for development of a body of knowledge that is critical to acquisition of full professional status. But, more important than the goal of

self-growth is the goal of constantly improving the services which dental hygienists provide to the public. "Research enables us to define the scientific basis underlying dental hygiene practice and makes us more certain about the purpose and outcome of our services, and more confident as practitioners."³ Therefore, our practice can only be as good as the research and theory base that supports it.⁴

Dental hygiene researchers have begun to develop baseline information regarding who we are and what we do. We also have begun to examine the effectiveness of dental hygiene services. To date, however, dental hygiene research efforts have resulted largely in isolated pilot studies. In the future, our efforts need to be more focused and more collaborative in nature in order to develop the body of knowledge in an orderly fashion. By identifying emphasis areas and by linking existing theory to our expanding knowledge base, we can begin to evolve as a scientific discipline.⁴ These concepts and theories will distinguish dental hygiene from dentistry, and other health professions, and move us out of an auxiliary status within the discipline of dentistry. Due to numerous constraints, dental hygiene traditionally has been positioned as a field of study within dentistry. Dental hygiene's birth and rearing were a part of dentistry, and that was useful at a time when consumers sought dental care to alleviate pain and "fix" their teeth. But it is possible that neither of these two areas of study currently represent the ultimate discipline — that which will be demanded by society in the future.⁵

If one examines the projections for health care in the next century, there is consensus that the public will be more involved in their own health care, including diagnosis and treatment. The consumer also will be demanding more emphasis on self-help and prevention. Thus, health promotion and education will be expected.⁵

It seems that the theoretical basis for preventive interventions in the area of oral health care is seriously lacking. Today's dental hygiene researcher has the potential to develop this discipline of the future. Although there are numerous definitions of dental hygiene, all of them link it to prevention. We are at a point in our maturation process

where we can begin to assess the appropriateness of developing a unique body of knowledge and plan strategies for meeting the future demands of society. We need to ask the question: Is there anything about dental hygiene that is distinct from dentistry? I know we have many things in common; we even share the same patient. But are there some things that dental hygienists do better, or differently, than anyone else? I believe that there are differences and that those are the areas in which we need to concentrate our efforts.⁵

Defining dental hygiene as a process of care, rather than as a list of duties, will provide the basis for justifying our existence in the future.⁴ As long as the practice of dental hygiene is described by listing the duties which we perform, those duties can be assessed, reassessed, and redelegated to others who might be accessible to perform them. But, if dental hygiene develops a sound scientific basis for our practices and procedures, we will become the recognized experts in oral health promotion and disease prevention, and technology and practice will change based upon the results of dental hygiene research. At the recent "Building Alliances Through Dental Hygiene Research Workshop" at the Annual Session of the American Dental Hygienists' Association, Michele Darby made an analogy which I will share with you today. She said that we need to become "neck-up" hygienists rather than "neck-down" hygienists. In other words, our practice will become more knowledge-based than technology-oriented. This, of course, is one of the goals of dental hygiene for the future.

Several documents developed by the efforts of organized dental hygiene associations in the United States and in Canada can serve as the basis for focusing our research efforts in the future. The *Prospectus for Dental Hygiene* published by the American Dental Hygienists' Association in 1988 reviews the impact of societal trends and issues for health care, the changes in American demographics and social structure, changes in American values, the future direction of health care, and the status of oral diseases, and relates these concerns to the future of dental hygiene practice. Another document entitled *The Practice of Dental Hygiene in Canada* is an excellent report prepared by the Working Group on the Practice of Dental Hygiene. It provides an historical overview of dental hygiene, describes human resources, education, regulation, and practice, and makes recommendations for the future. Both countries also have developed Standards for Practice which provide baseline information about the unique nature of dental hygiene practice.

"Dental hygiene, like other sciences, is a synthesis of facts, ideas, concepts, and philosophies — a unique entity."⁴ As such, our scholarly activity and our research efforts must be directed toward further defining that entity. Darby and Walsh have developed a definition of dental hygiene which

I believe is excellent because it describes what is unique about dental hygiene without ever listing one function. I will share this definition with you because it may serve as the framework for your deliberations over the next two days regarding future directions for dental hygiene research.

"Dental hygiene is the study of oral health practices and the management of adaptive behaviours required to perform these practices in order to assist clients in fulfilling their human need for optimal oral wellness. Dental hygiene involves assessment, diagnosis, planning of interventions, and evaluation, through oral disease prevention, treatment, oral health promotion, and collaboration. Thus, the study and management of the oral health behaviours in which human beings engage is the unique feature of dental hygiene which delineates its knowledge base from all other disciplines."⁴

If we think about dental hygienists as specialists in oral health promotion, disease prevention, and oral wellness, our future direction becomes quite clear.

Darby has identified the specific purposes of dental hygiene as follows:

1. to develop and maintain the individual's capacity to perform those behaviours essential to oral health and the mastery of self-care and the environment;
2. to prevent oral disease whenever possible using primary, secondary, and tertiary preventive interventions; and
3. to promote oral wellness.⁴

Thus, the dental hygienist-researcher must apply theories from other disciplines to develop a scientific basis for assisting the public in achieving optimum oral health. Historically, dental hygienists have been concerned with a holistic approach to patient care and a prevention-oriented, client-centred process of care. This, of course, is the area in which we will need to concentrate our research efforts in the future.

Last year, while I was on sabbatical leave, I had the privilege of working at the National Institute for Dental Research (NIDR) in the development of the *Long-Range Research Plan for the Nineties*.⁶ This plan is a part of a new NIDR initiative entitled *The Research and Action Program for Improving the Oral Health of Adults and Older Americans*. The goals of this initiative are: 1) to eliminate toothlessness in America in the next twenty years; 2) to prevent further deterioration of the oral health of those with already compromised dentitions; and 3) to ensure that adults already in good health maintain that state as they advance to the retirement years.⁶

The action side of the NIDR Research and Action Program depends on collaboration with other agencies, industry, and other professional groups (such as dental hygiene) in order to implement research findings into professional practice

and education. The research side involves the NIDR in spearheading research by dental scientists and related interdisciplinary researchers to advance science towards attaining the stated goals of the plan.

As a part of this larger research and action plan, the *Long-Range Research Plan for the Nineties* document was developed to summarize what is known and to make recommendations for directions of dental research in the next decade. Several panels of experts within various areas of study were formed to come to consensus on the state of the art and to set priorities for future research efforts. The various topics addressed by these panels and sub-panels included: dental caries; periodontal diseases and implants; craniofacial abnormalities; saliva, soft tissue diseases, and AIDS; pain and sensory motor dysfunction; and epidemiology, oral health promotion/disease prevention. In keeping with the goals of the NIDR Research and Action Program, the scope of the recommendations for the nineties emphasizes research directed toward needs of adults and older Americans and the advancement of knowledge relevant to oral health promotion and epidemiology.

Since dental hygiene's primary areas of concern historically have been related to prevention, oral health education and promotion and serving underserved populations, it seemed logical to develop a coinciding dental Hygiene Research Agenda for the Nineties⁷ which would contribute to the goals of the NIDR Research and Action Program and complement the dental research plan. While I certainly would not have the time or the inclination to review both plans in detail today, I thought highlights from each of the NIDR topic areas would serve to exemplify the complementary, yet unique, nature of dental hygiene research.

All of the dental research panels recognized that the future of dentistry will be more holistic in nature, with greater emphasis on the body's defense mechanisms; normal changes in oral tissues throughout life; and effects of environmental factors such as diet, medications, and lifestyle. As directed by the NIDR, they also focused on the importance of identifying risk factors for various oral diseases, on epidemiologic and behavioural research, and on monitoring science transfer from the research community to practitioners. Each of the panels also identified areas of priority within their field of expertise.

Of course, the dental caries panel recognized the significant advances over the past decade in prevention of caries, particularly in children aged 5-17 years. Their primary areas of concern for the next decade are related to further clarifying the bacterial etiology of caries, improving mechanisms for remineralization of enamel, developing a vaccine for caries prevention, and studying natural and active immunity to dental caries. Dental researchers also are interested in improving properties of dental materials and studying secondary or recurrent caries. An interesting area

for future dental research is related to transmission of caries. It is now generally accepted that mother, or whoever is the primary caretaker, is the primary source for cariogenic bacteria such as *S. mutans*. Future efforts, of particular concern to dental hygienists involved in research, might be directed toward conducting epidemiological studies to further define the changing patterns of dental caries prevalence, identifying and controlling risk factors, targeting specific caries preventive methods and agents to those individuals and groups at high risk, and matching preventive and therapeutic regimes to anticipated needs. Furthermore, study of combined application of preventive methods is warranted. For example, dental hygienists might investigate the effects of multiple fluoride usages and its relationship to compliance or to potential for toxicity. We also might begin to analyze the effect of interrelated variables such as genetics, dietary habits, and environmental factors on caries susceptibility. Rather than studying the properties of dental materials, dental hygienists could study the effects of oral hygiene and professional care on various dental materials.

With regard to periodontal diseases, dental researchers are focusing on a better understanding of the periodontal lesion, identifying specific pathogens, and further characterizing the infection. A clearer understanding of the relationship of genetics and immunology to periodontal diseases also is important. Dental hygienists, of course, would be more interested in assessing mechanisms to quantify disease activity in periodontal assessment, identifying risk factors associated with advancing disease, improving non-surgical and maintenance therapy, and testing strategies for developing long-term protective health behaviours.

Although craniofacial malformations, defects and malrelations have not traditionally been an area of major concern to dental hygiene, they represent a fascinating field of study. Dental scientists are studying the relationship of cell biology, biochemistry, genetics, and molecular biology to craniofacial abnormalities. Treatment of these defects also is receiving attention in dentistry. Dental hygienists could become involved in studying the economic, psychological, and sociological effects of craniofacial deformities. Epidemiological studies of TMJ dysfunction might also be of interest to dental hygiene.

In the areas of saliva, soft tissue diseases, and AIDS, significant progress again has been made through dental research efforts in the past decade. It is becoming increasingly evident that the oral soft tissues reflect changes in the general health of the body. The study of oral lesions associated with AIDS have increased our understanding of this relationship, as well as the critical nature of the immune system in the initiation and progression of oral diseases. Dental hygienists involved in research might study the prevalence of various soft tissue lesions, the relationship of

oral medications and systemic diseases to oral soft tissue lesions, and the effect of salivary deficiencies in the aging population.

Of course, orofacial pain is the number one reason that people avoid care. Dental scientists have made major advances in pain control and now understand that pain is a multidimensional experience involving cognitive, emotional, behavioral, social, and psychological factors. Dental hygienists might investigate those factors and evaluate behavioural aspects of pain control. The relationship between stress and TMJ pain or stress and oral habits also falls within the realm of dental hygiene science. Also, within this sub-topic, the panels addressed sensory motor dysfunction. Since over two million adults in the United States suffer from taste and smell disorders, hygienists might study the effects of these disorders on quality of life. Psychosocial effects of rehabilitation of oral motor function after surgery or injury also is related to potential future dental hygiene services.

And, last but certainly not least, is the area concerning oral health promotion/disease prevention, epidemiology, and science transfer. Over the past decade, it has become increasingly clear that in addition to biological and physical pathogens required for disease, it is necessary to consider the simultaneous influence of behavioural pathogens, or risk factors. A few examples include excessive alcohol or drug consumption, poor nutritional habits, physical inactivity, anxiety, anger or phobia. In contrast, positive behaviours may help reduce diseases. For example, self-care, prudent use of medications and therapies, and exercise, are believed to alleviate diseases. Behavioural and cognitive interventions have been shown to be useful in initiating positive behavioural changes such as smoking cessation or physical rehabilitation following trauma or surgery.^{6,7} Dental hygienists need to focus attention on examining the broad range of measurable psychological, behavioural, cultural and social interactions which impact oral health and disease. Research questions related to dental phobic behaviours and non-compliance, psychosocial and behavioural sequelae of untreated craniofacial deformities, development and maintenance of long-term protective health behaviours, management of chronic pain, the relationship of life stress events to oral diseases, risk factors associated with non-compliance with oral health recommendations, linkages between behavioural changes and oral health outcomes, efficacy of oral health promotion efforts, and examination of the relationship of utilization of dental hygiene services within the dental care delivery system and functional oral health status are important. These questions relate to dental hygiene practice and should become areas of much activity in the next decade.

As stated in the *NIDR Long Range Research Plan for the Nineties*, the ultimate success of dental research lies in its ability to effect improvements in the oral health and well-being of the people.⁶ For this reason, increasing emphasis is being placed on research-related epidemiology, behaviour and disease, oral health promotion, delivery systems and treatment outcomes. In the future, the practice of prevention by oral health professionals will increase, but it will integrally involve many influential factors which are external to dentistry and its technology. Preventive care will be targeted to high-risk groups, persons, and sites. Epidemiological studies over the next decade must not only collect data regarding incidence and prevalence of oral diseases, but must be designed to identify and analyze risk factors associated with various conditions.

Health promotion, which involves health education, organizational changes, economic considerations, and environmental supports for enhancing behaviours that are conducive to health, will become a major area for dental research and should be the primary concern for dental hygiene research. The application of preventive modalities is the basis of dental hygiene. Research activity should be directed toward identifying the myriad of psychosocial, economic, and political variables involved in problem solving related to health intervention. Greater attention will be given to behavioural interventions, health maintenance practices and oral health outcomes.⁷

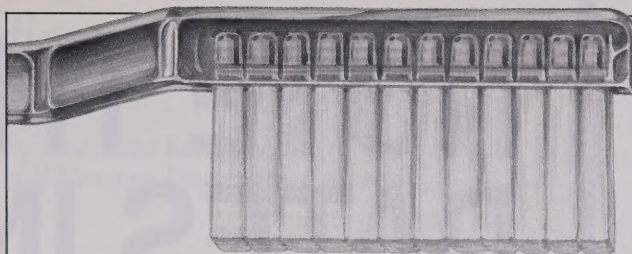
The list of research questions related to the domain of dental hygiene is endless. Fifty years ago, the President of the American Dental Hygienists' Association, Celia Perry, made the following statement in her 1940 address:

"In the field of scientific effort, the Association has taken a secondary role for the dental hygienists were created to serve the dental profession, and we have looked to them for leadership and guidance in erecting a procedure for the promotion of the science of dental hygiene...To think of producing scientists is very improbable, but we should promote an understanding of scientific procedure."^{4,8}

Obviously, we have come a long way since that time. Dental hygiene is an emerging discipline facing the exciting challenge of developing a scientific basis for our practice. We now serve the public and collaborate with dentistry for the common goal of optimal oral health. Dental hygiene scientists are building alliances with practitioners for the promotion of oral wellness. Let us accept the challenge which lies ahead so that fifty years from today, dental hygiene scientists will look back at the issues we are discussing today with the same feeling of accomplishment that we feel when we reflect on that address from 1940. I feel confident that the alliances built here over the next two days will assist us in moving forward into the twenty-first century. ■

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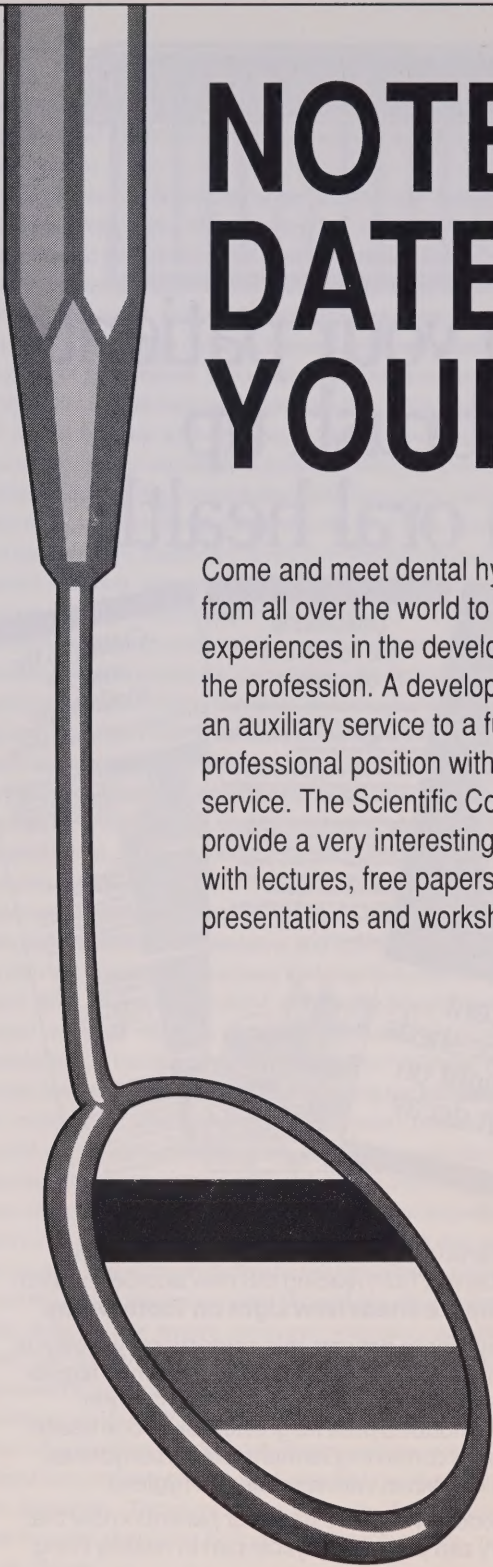
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**12TH INTERNATIONAL
SYMPOSIUM
ON DENTAL HYGIENE
THE HAGUE
THE NETHERLANDS
JULY 1 - JULY 4, 1992**

**THE DENTAL HYGIENIST:
FROM AUXILIARY TO
COLLEAGUE**

A Research Paradigm in an Emerging Discipline

.....
by Janet Ross Kerr, RN, PhD
Faculty of Nursing, University of Alberta



Janet Ross Kerr

I am pleased to have the opportunity to meet with you on the occasion of this Symposium on Clinical Dental Hygiene in which you are searching for directions for research, teaching and evaluation. We don't often meet with those in our sister professions, and dental hygiene and nursing must surely fit that description. We do

have many things in common — and from my reading it seems to me that you have reflected upon these and perhaps better recognized them. Among our commonalities are the basis of our practice in health care, the largely female character of our professional workforce, our historical subservience to more powerful, male-dominated professions, and our service of care and treatment which has tended to be undervalued in society.

What I would like to do this morning is speak first about critical issues in professionalization as background to a discussion of research issues, and then to take a look at issues in theory development in an emerging professional discipline. My discussion necessarily comes from nursing, and hopefully this will be productive in terms of raising some issues and stimulating thinking about your own goals, accomplishments and directions.

Moloney (1986) has referred to the "natural history of professionalization" as a description of the milestones in the development of professions. Others such as Wilensky (1964) have identified steps that can be identified along the road to professional status. Some of these include when the profession first became a full-time occupation, the date of the first educational program to prepare practitioners of the profession, and the date the first university school was established. Other significant events include the date the first national professional association was formed, the date of the enactment of the first provincial registration act, and the development and adoption of a formal code of ethics. Although these events are static and finite in terms of time, they are useful in thinking about developmental assessment of professions and provide some indication of group progress in terms of the process of professionalization, as well as a comparison between groups of the events along this continuum.

As far as comparisons between nursing and medicine are concerned, the dates are between 50 to 100 years apart on most of the dimensions — it is also clear that nursing took much longer to develop as a profession than did medicine — and it might also be interesting to explore such relationships and events in a comparative sense in relation to your own field. Also, one could add that the development and consolidation of a research thrust is an essential part of the development of any professional discipline, and certain milestones in relation to this area could be identified that would be common across professions.

Stamm (1982, p. 6) in his paper presented at the First Canadian Conference on Dental Hygiene Research notes that "Wilensky's omission of research (in his description of these steps) is rather noteworthy". Generally those who have written about professionalization have not examined the research mandate of a profession in any detailed way, probably because much of the seminal work in professionalization, work which most authors refer to, was completed some twenty to thirty years ago, prior to the intensive efforts and funding for research for all fields of endeavour became available in the late 50's, 60's and 70's. This most interesting and much quoted article by Wilensky entitled "The professionalization of everyone?" was written in 1964 and because the historical context of his remarks is different, its content should not necessarily be taken at face value.

Stamm's admonition in the same paper against following nursing's route of theory and research development within the discipline and the alternative and preferable route he cited as having been taken by physio and occupational therapy were for me, both provocative and mildly disturbing. In the first place, I find myself hampered by the fact that nursing has spent very little time in dialogue with sister professions; I am not sure why this is so, but it may be that it is a case of being so immersed in our own problems as we perceive them, we have failed to recognize what has been going on around us. However, this is somewhat unfortunate because we learn a great deal about ourselves through comparisons and discussions with others. Notwithstanding the above, the assumption on Stamm's part that nursing has not been through the route of preparing its researchers in other disciplines is an incorrect one. The Nurse Scientist Program in the United States in the 1960's and 1970's attests to this fact. This was a fellowship program which allowed

nurses to obtain doctoral preparation in physiology, sociology, psychology and other related disciplines prior to re-entering the field of nursing and undertaking research pertaining to nursing. I might add that some Canadian nurses obtained their doctoral preparation under the auspices of this program as well. Although the program was a success and many important leaders in nursing emerged from it, it was generally recognized that it was simply a beginning developmental stage in the evolution of a system of graduate education which would be most appropriate for nursing. In addition, nurses have flocked to other fields for PhD's because of the lack of doctoral programs in nursing; this trend is still evident in Canada today.

Because nurses had preparation in the other disciplines, they were often lost to nursing, and at least some of those who returned to nursing often were interested in questions more closely allied to their new discipline than to nursing questions; it was for this reason that nursing moved away from that model. In the U.S., doctoral programs in nursing were next established and have increased in number and scope. Even developing countries such as Brazil and Korea have one or more doctoral programs in nursing operating in their countries. You may or may not be aware that there is currently no doctoral program in nursing in Canada, and we are engaged in perhaps our most difficult battle in some time to secure funding for such programs. At the University of Alberta we have had a PhD program in nursing approved for four years, but not yet funded; hence we have been engaged in a somewhat protracted and exhausting campaign to secure government funding for this program. The University of Toronto expects to be able to offer a doctoral program in nursing in the near future, and jointly McGill University and the University of Montreal hope to have a program which has been recently approved by both universities funded by the Quebec government.

I also wanted to comment on the first reason, given for suggesting that your group should seek graduate research preparation outside the discipline, that it would be difficult for dental hygiene to wield the kind of clout necessary to initiate programs in the discipline — that nursing had been able to do so because it was able to command power from the sheer number of professionals in the field. Although I would like to believe that this is true, I have some difficulty in doing so. The number of professional nurses is very large by comparison with all other health professions, and there is potential power there which might be used. However, historically nursing has seldom recognized or used its strength in numbers to achieve its professional objectives. We are beginning to become more politically aware and active, but I simply do not believe that nurses have used the

numbers game or political action to any extent until perhaps the past decade or decade and a half — and even at that such use has been tentative and sporadic.

Professions are founded upon the knowledge required for their pursuit. The extensive and abstract knowledge requiring a period of concentrated training, as well as the service or practice component, constitute distinguishing features of professions (Goode, 1960). The focus of a discipline is largely knowledge development where emphasis is placed upon discovering, describing and extending and/or modifying phenomena for the purpose of greater understanding. I use the term professional discipline to refer

to nursing in the way that was delineated by Donaldson and Crowley (1978) who identified the similarities and differences between academic and professional disciplines.

Because nursing is a professional rather than an academic discipline, it

is founded upon a clinical practice component. As such nurses provide health care to clients, educate new practitioners, do research and ensure that the relevance and fundamental value of nursing to society is maintained and explained appropriately to the public (Shaver, 1978, p. 109). The basis of professional practice is nursing knowledge which furnishes the support for that practice. Related to this is understanding the nature of knowing in nursing. We want to know what knowledge is essential and how one acquires this knowledge. One way of pursuing these questions has been looking at nursing work. Another avenue of investigation has been the attempt to identify the concepts and phenomena of interest to nurses. Notwithstanding these attempts to understand the nature of knowing in nursing, it has been generally agreed that the knowledge required to practice nursing is unique. Thus, in order to practice nursing, knowledge acquired for another profession might be helpful, but would not be sufficient, and in many cases would not be relevant.

In terms of the ways of knowing in nursing — knowledge necessary for practice has evolved as needs have changed, and increases in the scientific knowledge base have been evident. However, there has been heated discussion about whether or not scientific knowledge was the only knowledge that was needed to practice nursing. As noted by Carper (1978), the kind of knowledge needed required for nursing is primarily directed by practice demands, issues and problems. Carper has asserted that there are four different ways of knowing, and that these four ways have been valued and used in practice by nursing, these being empirics, esthetics, ethics, and personal knowledge. The purpose of each of these ways of knowing is different, as is the way in which the particular form of knowledge is derived and generated. Empirics is considered to be the science of

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nursing, where actual events are seen as objective and potentially verifiable phenomenon (Chinn & Jacobs, 1987). However, many have questioned this traditional method of acquiring knowledge, asserting that there are other and perhaps more important ways of knowing in the discipline. In nursing, one of the problems in pursuing the empirical approach exclusively is the fact that it is difficult to measure phenomena that are of concern to nursing and also the care of human beings would seem to depend on much more than such knowledge. Thus, the view of science has enlarged to include knowledge generated by other methods such as phenomenological and inductive methods.

The art of nursing is generally referred to as esthetics. This means specific and unique knowledge as opposed to generalizations (Carper, 1978). Essentially this means understanding the meaning of an encounter with another person. This knowledge is very important for it underscores the way in which one person will be understood by another and actions which may result from the encounter. At the basis of this form of knowing is empathy, and its validity is assessed by means of criticism.

Ethics is yet another way of knowing. Ethics is concerned with the "oughts" and "shoulds" of particular situations. Therefore, study of ethics involved developing an understanding of the various stances on what is right or good for both the individual and society. This way of knowing involves making judgements and acting in ways that derive from a philosophical position on what is right. Validating this type of knowledge is done through reasoning and justification.

Personal knowledge is a final way of knowing which centres around knowing oneself. This knowing is a "standing in relation to another human being and confronting that human being as a person... The relation is one of reciprocity, a state of being that cannot be described or even experienced—it can only be actualized" (Carper, 1978, p. 16). The validity of personal knowledge is assessed through reflection, such as "do I know what I do and do what I know?" (Chinn and Jacobs, 1987).

In exploring nursing as a discipline, it becomes clear that identifying the boundaries between nursing and other disciplines is not easy: "We take for granted the nursing perspective as generally accepted and understood, until explanation of the particulars is required." (Donaldson & Crowley, 1978, p. 113). The overlapping and ever-changing boundaries between that various disciplines contribute to the difficulty. The assertion has been made that in nursing, "authors tend to emphasize speculative formulations and theoretical reflections aimed at deriving the nature of nursing rather than explicating the structure of the body of knowledge that constitutes the discipline of nursing" (p. 113). It has been suggested that nurses should "seek relationships and commonalities in the ideas of writers whose work has influenced (and continues to influence) tacit knowledge of the scope of the field" (p. 113).

Shermis has identified the following criteria for academic disciplines:

- 1) an impressive body of time-tested works;
- 2) suitable techniques for studying the concepts of the discipline;
- 3) creation of a link between human activities and aspirations;
- 4) a connection past and present that inspires and sustains future inquiry; and
- 5) achievements of revered scholarship (Shermis, 1962).

It is evident that there has been considerable discussion, debate and concern with nursing knowledge leading to a significant period of growth and development of the base of knowledge in nursing in recent years. As a result of this period of intellectual ferment, there would seem to be a developing consensus about the phenomena of interest in the discipline. There has been a great deal of growth in nursing research over the past three decades, as noted in the increased number of journals publishing nursing research. There has also been a groundswell of activity in ensuring sources of funding for nursing research, leading to the availability of much more funding than in the past.

Donaldson and Crowley have put forward three categories for identifying and understanding substantive areas for knowledge development in nursing:

1. Concern with principles and laws that govern the life processes, well-being, and optimum functioning of human beings — sick or well...
2. Concern with the patterning of human behaviour in interaction with the environment in critical life situations...
3. Concern with the processes by which positive changes in health status are affected (Donaldson & Crowley, 1978, pp. 113-114).

The development of the primary concepts of the discipline has led to certain questions, one of which is "how to know and how to judge the adequacy of knowledge, including theory?" (Chinn & Jacobs, 1983, p. 40). The concepts of the metaparadigm of nursing, generally described as person, health, environment and nursing, have been debated at length and are widely considered to be an important focus for research and theory development. Finally there would seem to be other ideas of considerable importance in terms of providing direction for education, practice and research. Holism is a concept widely valued in nursing. Here, the whole person is viewed in terms of the phenomena to be studied; as such, important directions are provided for research.

The debate about whether knowledge and theory would be unique or borrowed, arose from questions which were asked about the nature of the knowledge required for nursing. Borrowed theory referred to the theory and knowledge developed by other disciplines and drawn on by nursing (Johnson, 1968), while unique theory referred to

theory and knowledge which arose from observing phenomena and asking questions which were clearly different from questions which would be asked by other disciplines (Johnson, 1968). Johnson points out that this approach may be somewhat nonsensical in that knowledge is in the public domain and does not "belong" to any one discipline. Donaldson and Crowley (1978) corroborate this indicating that it is simply not possible to borrow knowledge from another discipline since the particular perspective of each discipline is different; the argument follows that knowledge cannot be understood apart from the context where it was generated. In using "borrowed" concepts or theories, they must of necessity be redefined and synthesized according to the perspective of the borrowing discipline.

The confusion surrounding this issue arose, in part, from the use of terms. At the outset of the debate, the issue centred around borrowed versus unique theory, but over time, the discussion changed to a debate over borrowed versus unique knowledge. There may not necessarily be a need for uniqueness if the issue is theory explaining a phenomenon. However, if the discussion centres around a body of knowledge, uniqueness or distinctiveness might well be important. Such uniqueness would arise from substantive content and the organization of the knowledge.

There has also been controversy surrounding the sources of nursing knowledge. It can be seen that the concepts of nursing practice have influenced the subject matter of research, and consequently knowledge development, from Nightingale onward (Gortner, 1983). The question arises as to whether practice should continue to be the major source of nursing knowledge? Some have said yes such as Wald and Leonard (1964), and called for theories to be formulated from concepts developed from the realities of practice rather than from the perspective of other fields or disciplines. Although this debate has extended into the kinds of theory needed for nursing, it has generally been agreed that nursing practice should not be the exclusive source. As Donaldson and Crowley (1978) point out, clinical practice deals with the person requiring immediate action in the here and now. By contrast, the discipline is much larger and encompasses a knowledge base relevant to all areas of practice and links the past, present and future. Therefore, its breadth goes beyond that required for nursing practice.

The development of nursing theory then, arising from questions about the practice of nursing, is tested through research, and is used to enlighten the practice of nursing. I hope that I have shed some light on some of the questions you are addressing. It is exciting to be involved in research development in an emerging discipline, and I wish you all the best as you expand your horizons and decide for yourselves on the directions in which you wish to proceed.

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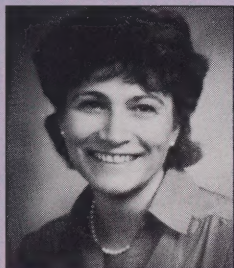
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Research Initiatives Workshops

..... SUMMARY

Clinical Dental Hygiene Therapeutic Modalities and Technology

Irene R. Woodall, RDH, PhD



Irene Woodall

After reviewing the attributes dental hygienists (as a group) possess and the issues that confront dental hygiene in the 1990's, the group decided that the most critical area of development is adaptability. The profession and its individual members need to prepare for dramatic change in the profession and to be prepared to control those changes, rather than merely reacting to them. In discussing how adaptability can become a descriptor for us, the group concluded that if we can achieve this goal we will be able to crush many of the barriers that currently impede our development.

The issues surrounding dental hygiene provide barriers and opportunities. The flexible profession should be able to capitalize on opportunities, and work to minimize barriers or work around them. Issues that affect everyday clinical practice and the future of the profession include the new technology associated with diagnostic devices and treatment modalities that are likely to greatly alter the nature of the dental hygiene appointment.

External barriers to dental hygiene's progress include: practice acts definitions and limitations; governmental decisions that affect our livelihood and scope of practice; the provincial/state dental associations as well as national groups; the lack of information the public has regarding dental hygiene and their confusion regarding our education and role; and the lack of direct affiliation and liaison with other health professionals.

Internal barriers include our self-concept as a profession, and the degree to which we lack professional maturity, a positive public image, and appropriate educational level. Another barrier is the lack of balance between male/female membership. We seem to lack the ability to bond among ourselves and to communicate frequently and accurately among ourselves and with others.

Out of an array of possible avenues that could reasonably be undertaken in the coming months and years to minimize barriers and optimize opportunities, the group chose three essential paths of action:

"There should be greater opportunities and greater diversity for the profession. There should be less dependence upon employers to define/limit clinical practice."

1) *Communication:* The profession needs to learn to communicate with effectiveness and efficiency both internally (to dental hygiene from the global level down to the local level and to individuals) and externally (to the public, government, and associated health disciplines). This is a natural extension of our communication skills used chairside and in community dentistry forums. The focus here is on developing communication skills that are based on the substantial research conducted in this area so that they are seen as a quantifiable, finely tuned strength that can be used to help solve our professional problems as well as

making us more effective in the application of our expertise in clinical and community dental hygiene.

2) *Education:* Standards of education need to be specified as a four-year degree prior to entry to dental hygiene. A core of courses should be standardized among programs, but the actual degree programs should be

diverse so that dental hygienists can have an array of choices for study beyond the basics of dental hygiene. Examples might be a co-major or minor in communications, early childhood development, a group major/minor in sciences or a specific basic science, psychology, sociology, education, public health, business, or other area.

3) *Expanding our scope of practice:* The functional definition of dental hygiene needs to expand beyond the procedures defined by a traditional dental hygiene appointment. The profession needs to look to an expanding scope that includes new, emerging technology that can readily be adopted by our membership and incorporated in clinical practice or other venues where dental hygienists work with the public. This expanded scope can be enhanced by developing a research approach to decision-making and clinical practice. Hygienists should be conducting original research on time-honoured practices but perhaps more importantly on emerging technology.

When dental hygiene has finely tuned its communications skills, has a solid educational base behind entry to dental hygiene, and has expanded its scope of practice so that it is prepared for the future, they should become synergistic, propelling the profession into the 21st century. There should be greater opportunities and greater diversity for the profession. There should be less dependence upon employers to define/limit clinical practice.

The action plan designed to make these goals realizable is shown as a merging Venn diagram (see Figure 2). The first diagram shows three separate circles separated by the barriers (an amorphous grouping of issues, problems, impediments). The three circles are labeled Education, Communication, and Role Expansion. The intention is that as the action plans are developed and implemented in these three major areas, the barriers will diminish. Action in any of the circles should help progress in the other two and bring the three goals closer together until they are in synergy. This is shown in the second diagram.

For instance, relating to Education, movement toward a four-year degree requirement, development of advanced degrees, and continuing education programs for our membership will help provide opportunities for expanding our ability to communicate effectively (specifying training/research in this area as a core area), and to adopt new roles (specifying new procedures, new technology, and related research).

Likewise, intense programs in Communication both within the profession (talking about these goals and greatly improv-

ing the frequency and clarity of the communication) and outside the profession (using communication skills to communicate to the government, the public at large, the educational institutions) should make it easier to improve our educational standards and flexibility and to legitimize our efforts to claim new technology and build a solid research base.

Claiming new technology and expanding our scope of practice will give us something to communicate to each other and to outside influences and provide options for education. It should give us credibility as we develop a strong research base for our profession. People may begin to listen to our messages. Our own membership should take notice that changes are occurring to which they should attend.

While this strategy does not address all issues confronting us today, it does provide a three-pronged focus that is manageable and goal-directed. As we reach the goals set here, we should see barriers falling and the issues changing. Then we can modify the plan to meet the new set of circumstances, and to again focus on specific targets. ■

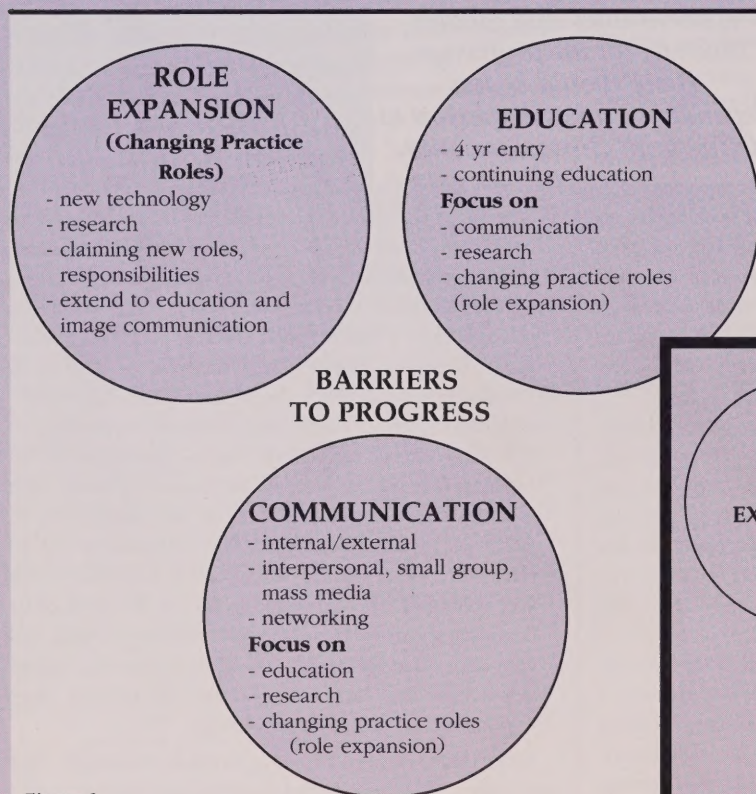


Figure 1

Today's Situation Suggests this Plan to Bring Together Three Major Goals and to Minimize Barriers

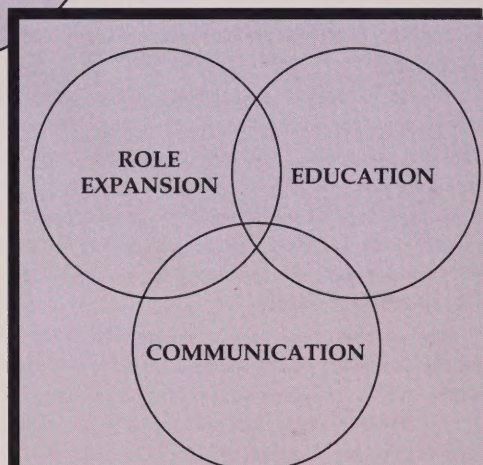
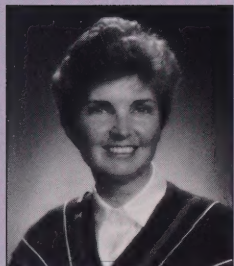


Figure 2

The Plan Leads Towards this Synthesized Goal and New Issues...

Dental Hygiene Practice, Regulation and Quality Assurance

Patricia M. Johnson, RDH, PhD



Patricia M. Johnson

Introduction

The purpose of the workshop was to identify issues concerning the nature and regulation of, and quality assurance in, dental hygiene clinical practice; and to develop research-oriented strategies to enhance that practice. Factors considered included barriers to and the availability of resources for conducting research,

the need to enhance coalitions and collaboration between researchers, educators and practitioners, and an action plan to initiate future-oriented research into the major issues. To avoid duplication of efforts, the working group members were mindful of the concurrent deliberations undertaken by the other working groups on closely related issues.

Given the three interrelated topic areas to be considered — namely, practice, regulation and quality assurance — and the time allotted, the group agreed to brainstorm issues for each area separately and then select from each area one major or fundamental issue for further consideration.

Identification of Issues

1. Dental Hygiene Practice

Issues: scope, supervision, settings, mode/arrangements, transfer of knowledge.

Major Issue: scope of dental hygiene clinical practice

2. Professional Regulation

Issues: self-regulation, requirements for entry to practice and for licence renewal, licensure process (including the sub-issue of clinical examinations), reciprocity/portability of licence, specialized dental hygiene practice (as opposed to general practice).

Major Issue: self-regulation for dental hygienists

3. Quality Assurance

Issues: need for a conceptual model for dental hygiene practice as a basis for practice standards, continued competence, and lack of quality assurance programs.

One set of sub-issues identified as part of quality assurance included:

- (1) the effect of implicit or personally-derived standards and explicit or professionally-determined standards;
- (2) the need for both process- and outcome-oriented dynamic standards that are responsive to current conditions and empirically-based practice improvements;

- (3) determining the appropriateness and effectiveness of standards;
- (4) identification of measures and data required to assess quality;
- (5) a process for evaluation; and
- (6) determining who will do the evaluation.

A second set of sub-issues concerned compliance and the nature and effectiveness of incentives and penalties as part of a quality assurance program.

The final sub-issue concerned the repercussions of quality assurance mechanisms for both the public and the profession, as individuals and collectively.

Major Issue: quality assurance

Overview of Major Issues

1. Scope of Practice

The Issue:

Agreement on a definition of the scope of dental hygiene practice is fundamental to the development of conceptual models for practice. A holistic approach that excludes a serial listing of procedures was fully supported by the group. Another concern involved the most appropriate form of practice supervision to ensure the protection of the public and whether it should vary by practice setting and client type.

Barriers:

1. Conflicting interests — both internal and external to dental hygiene. The group saw a lack of agreement among dental hygienists regarding the preferred definition of a scope of practice. External conflicting interest groups include dentists who have economic self-interests and government and consumer groups concerned with the public interest.
2. Lack of consumer awareness — issues surrounding scope of dental hygiene practice are perceived to have a low public profile, leading to lack of interest in and commitment to dental hygiene-related research projects.
3. Lack of funding to study issues — which is related to barriers 1 and 2.
4. Lack of information and data on which to base recommendations and decisions regarding required supervision.

Resources:

1. Consumerism — increased activity of consumer interest groups who are exerting their "need" and "right to know". This leads in turn to increased awareness of the public implications of dental hygiene scope of practice issues.

2. Interdisciplinary research interests — involvement of researchers from other disciplines increases awareness of and interest in dental hygiene-related issues. For example, sociologists, economists and lawyers have served on research committees and government commissions concerned with provision of dental hygiene and other oral health services.
3. Timeliness of women's issues — as a female-dominant profession during a time when women's issues are receiving more attention should enhance opportunities to obtain funding and other resources for research.
4. Organizational development — dental hygiene is well-organized at the federal, provincial/state and local levels. This provides a strong network for lobbying and acquiring needed resources.

2. Professional Regulation

The Issue:

The group discussed questions such as who is going to be the regulator and how is accountability to the public to be resolved. While the group endorsed the concept of self-regulation, it recognized the lack of research to support this position — that is, that self-regulation is in the public interest.

Barriers:

1. Interests that have resulted in a lack of unity on the issue.
2. Lack of consumer awareness about dental hygiene and dental hygiene-related issues.
3. Lack of funds to a) study the issue, and b) establish self-regulatory bodies, serve to hinder progress on the issue.
4. Limited numbers compared to other most-established professional groups, coupled with a lack of political expertise within dental hygiene, hinder opportunities to undertake investigative studies.

Resources:

1. Self-regulation concept has been officially endorsed by both Canadian and U.S. national dental hygiene organizations.
2. A precedent has been established, in that almost 75% of dental hygienists in Canada are, or shortly will be, self-regulating (Quebec, Ontario and Alberta).
3. The increasing numbers of dental hygienists make them a potentially powerful political force.
4. Increased emphasis in the public sector on service effectiveness and technical efficiency in providing those services, coupled with changing demographic and epidemiologic trends (population aging and shift to basic periodontal problems).

3. Quality Assurance

The Issue:

The issue involves moral, ethical and public safety concerns associated with provision of dental hygiene services. Of particular interest was the need to establish and ensure compliance with baseline standards for practice.

Barriers:

1. Lack of tested quality assurance program models.
2. Implementation problems due to possible apprehension among dental hygienists uncertain about the process.
3. Lack of responsibility and authority in some jurisdictions for quality assurance.

Resources:

1. Data from existing databases — for example, association practice profiles and insurance company records.
2. Standards for practice already exist for Canada and the United States (although they are process rather than outcome-oriented).
3. The issue of quality assurance has a strong public profile among government, professional, consumer and media groups.

The Action Plan

The group developed an outline of an action plan for research initiatives that was sufficiently broad to apply to all the major issues.

1. Organize a conference, seminar or other vehicle to bring together interested parties to identify and seek consensus on the issue(s) and build commitment and coalitions for resolving them.
2. Foster the development of, and encourage participation in self-study and formal learning programs to develop research skills and expertise among dental hygienists.
3. Formulate the research questions.
4. Identify content and methodology experts to design and conduct the research.
5. Develop a plan to secure funds and other resources.
6. Develop strategies to manage internal and external barriers associated with the issues under investigation.
7. Co-operate in the collection, analysis and interpretation of data.
8. Disseminate findings.
9. Establish a strategy to apply the findings.

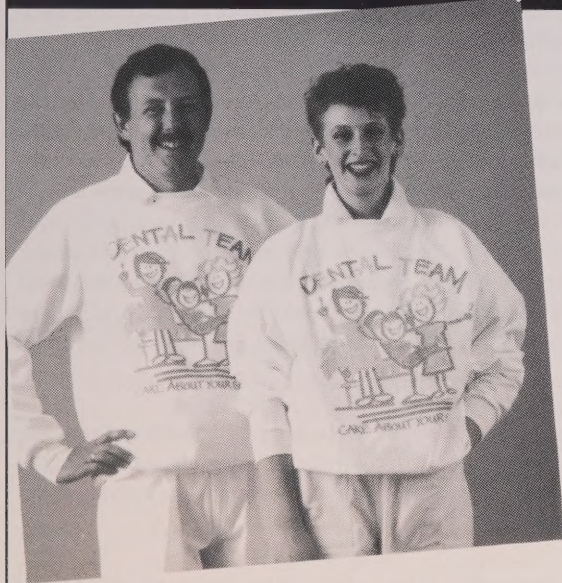
Common Barriers/Specific Action Areas

A compendium of barriers viewed by the group as being common to all the identified issues and requiring special attention was compiled.

1. Politico-economic factors.
2. Dental hygiene profession's weak public profile.
3. Dental hygiene issues not seen by public as broader health and social issues.
4. Lack of understanding and consensus among dental hygienists as to the major issues.

5. Lack of networks among dental hygiene researchers, educators and clinicians.
6. Lack of basic research skills and knowledge among dental hygienists.
7. Lack of available research expertise, including grantmanship.
8. Lack of funding.
9. Need to identify data requirements and sources necessary to investigate the issues.
10. Need to establish legal access to dental hygienist-related practice records. ■

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CONDITIONS:

1. The candidate must be a full-time member of the teaching staff of one of the Canadian schools of dental hygiene with a minimum of five years university or community college teaching experience,
or
a dental hygienist engaged in community dental hygiene activities in an institutional or public health setting, with a minimum of five years experience in community health dental hygiene.
2. The proposed program of study must be defined and well organized to ensure benefit to the individual and his or her dental school, and, minimally it must be of approximately one month's duration. Conventions and the like will not be considered as appropriate programs of study within the term of this award.
3. Applicants will apply by letter giving complete details of the proposed program of study. A curriculum vitae should be attached. Applications should be sent to the Canadian Fund for Dental Education, no later than March 1.
4. The candidate's application must be supported by a letter from his or her dean or other appropriate senior faculty official indicating approval of the study period and its benefits to the school of hygiene and the individual staff member,
or
a letter from the appropriate official of the dental hygienist's department, agency or institution indicating approval of the study period and its benefits to the agency and the individual dental hygienist.
5. Upon completion of the study period, the Canadian Fund for Dental Education will expect to receive a report on the experience, a copy of which will be made available to Warner-Lambert Canada Inc.
6. All applications will be reviewed by CFDE's Advisory Committee on Fellowship Selection. This Committee will make its recommendation to the Fund's Board of Trustees, and the award winner's name will be announced shortly after the Board's annual meeting in May.



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Epidemiology, Community Disease Prevention and Oral Health Promotion

Joanne Clovis, DipDH, BEd, MSc



Joanne Clovis

Fourteen participants contributed to the discussion in this workshop. (They, together with other Workshop participants, are listed on page 183). Two participants agreed to act as recorders. Ann Eshenauer facilitated discussion and notes by recording key items on a flipchart, and Jacquie Dahl

maintained a record of identified trends, issues, barriers, resources and recommended action.

Of the fourteen workshop participants eleven are currently employed in the community health system in Alberta. The group agreed to focus on issues and action plans related to the Alberta community health system. Clearly many trends, issues and barriers which affect dental hygiene research cross multiple sectors, and each issue may require numerous action plans. A particular vested interest group, such as Alberta community health dental hygienists, might choose action plans that are unique to their environment and that may or may not involve other sectors or other groups of dental hygienists.

Trends and Issues

The group first identified trends and issues that affect dental hygiene research. Emphasis was placed on those that are especially relevant to community health. The most obvious issue affecting oral health in Canada is a lack of data regarding the prevalence and incidence of oral disease in most populations. Dental caries experience has been reported for children aged 12 to 13 years across Canada, and from these reports it is clear that dental caries minimally affects a large proportion of children. There are, however, regional differences, and the highest reported prevalence is among specific groups such as native children and new immigrants.

Some current studies, mostly in Ontario, have reported an increase in prevalence of root caries among older adults. Similarly, periodontal disease has been reported for some older adult groups and, for those in collective living centres in Ontario, it has been suggested that the majority can be appropriately treated by dental hygiene care. For most Canadian populations, however, little is known about the prevalence, incidence, and severity of oral disease. Canadians have frequently looked to data from United States and

suggested that Canada is likely comparable. It may not be comparable. Without standardized instruments and systems for data collection, analysis and distribution, the status of oral health in Canadians cannot be measured. Appropriate programs for the promotion and maintenance of oral health are dependent on the development of a sound database.

A primary trend is one that affects all current health research. Perceptions of health by individuals and health professionals have changed radically in the last few decades. Freedom from disease is no longer equated with health. A more recent "wellness" model includes dimensions other than the physical. The most recent definitions of health by the World Health Organization and Health and Welfare Canada include the notion of quality of life and are interpreted from a social perspective. "Health promotion" has become the major health initiative of the 80's. The implications for oral health are many and, as yet, largely unexplored.

Consumers of health care have begun to demand quality care as a result of heightened awareness. This major trend has an impact on the quality and delivery of all health care. The demand for an increase in the availability of dental hygiene care has resulted in part from consumer demand. Consumers are also demanding a more equitable system of payment for health care, particularly oral health care. There are still many groups that do not have financial access to care and consumer associations are advocating on their behalf.

Another issue regarding the delivery of oral health care is the continuing maldistribution of providers. In many rural and remote areas of Canada oral health services are either not available or only minimally available. Similarly, in urban areas new Canadians and those who are institutionalized have limited access to providers.

Currently oral health care providers do not represent the ethnographic differences in health and health perceptions resulting from the rapid growth of new cultures and languages in Canadian society. For many Canadians oral health care is provided, when available, in a language foreign to the patient.

Economics was cited as a major issue not only because of the obvious reflection on the level and quality of health care available but also because of the growing maldistribution of income. The numbers of low income Canadians are growing. These are the people for whom oral health care may receive low priority. They are also not able to access social assistance programs.

Changes in the basic family structure from nuclear to single, blended and extended, also impact on oral health. In particular regarding which "dependents" are eligible for dental insurance, and which "parents" or "responsible adults" are responsible for seeking care for their dependents.

The range of trends and issues affecting dental hygiene research was acknowledged to be very wide and includes most of the major trends and issues affecting all Canadians. Awareness of current trends and issues is the first step in any planning.

Barriers and Resources

Having identified some major social trends and issues the workshop group then focused on barriers and resources particularly as they apply to Alberta community health.

Funding was identified as a major barrier to research. Knowledge of what is available and where it is available is critical. The group identified numerous sources of funding, primarily government and corporate. At the federal level, the National Health Research and Development Program, the Seniors Independence Program and the Health Promotion Contribution Program were identified. Health and Welfare Canada now have a directory of funding sources. Also on a national level are the Canadian Dental Hygienists' Association and the Canadian Fund for Dental Education. Provincially, the Alberta Dental Hygienists' Association and the Alberta Medical Association have limited funds. Other disciplines or health associations should be explored as potential sources.

Two key suggestions regarding funding were made. Frequently small initiatives or programs can "piggyback" larger or more global programs. The use of multiple sources of funding may prevent the size and nature of a project from being limited by the funds available from a single source.

Grantsmanship is equally important as availability of funding. Grant application is difficult for the novice and funding agencies are reluctant to fund novice researchers regardless of the impressiveness of the application. Solutions to this problem include finding a mentor, teaming up with experts, and honing skills by applying knowledge gained from applications that were not granted.

Lack of knowledge about research — research design and methodology, statistics, evaluation, data collection and analysis — is an enormous barrier for anyone contemplating even a small beginning. A number of workshop participants suggested that acquiring a knowledge base might mean further education at university. Depending on the knowledge level of the individual, continuing education courses may suffice. In Alberta, the Department of Health could sponsor learning events for those dental hygienists involved in community health. Other experts in community health could be tapped for their knowledge and many might even be available as external consultants for projects.

Building a better research base in dental hygiene requires some initiative on the part of individual dental hygienists. Identifying gaps in one's own knowledge is the first step in moving ahead. The second step is identifying sources of information and the first step is tapping those sources.

Action

The workshop group suggested that the pursuit of knowledge about the process of research is the first action step. This pursuit of knowledge might be formal or informal. University courses, continuing education courses, and community health workshops are examples of formal sources of knowledge. Informal approaches could include meeting, talking, and collaborating with others in dental hygiene and other individuals and groups interested in health.

The Alberta Department of Health could develop a directory of research skills and expertise within the community health system in Alberta. This could identify specific individuals and agencies as sources of expertise for oral health and other disciplines.

Individual dental hygienists need to pursue the learning of writing and publishing skills. Literature reviews in areas of interest could be completed by individuals and circulated to others within the community health system in Alberta. The editor of the CDHA journal is a potential source of information and assistance.

The collective pursuit of information, assistance, resources and direction could be facilitated by lobbying as a group. The number of community health dental hygienists in Alberta is large enough to mount an effective lobby. This same group could effectively build alliances and collaborate with other health professionals. Beyond the immediate and obvious health care professionals and contacts are a variety of other groups and agencies which have vested interest in health. Schools, environmental groups, and community planning groups represent opportunities for intersectoral collaboration and research initiatives.

A strengthening of the relationship with post-secondary institutions is an action step which could lead to research. The workshop group suggested that the University of Alberta Dental Hygiene Program might strengthen the research orientation in the student curriculum. The University of Alberta Dental Hygiene Program and community health dental hygienists could collaborate on research initiatives. Similarly, other post-secondary programs might provide expertise in areas of interest to community health dental hygienists. Collaboration on research initiatives might lead to the attainment of a variety of goals and objectives for the collaborators.

The workshop group agreed that they should adopt the strengths of a "Health Promotion" focus and approach for their activity. Implicit in the "Health Promotion" approach is a broad perspective of health with a wide range of opportunity for investigation. ■

Dental Hygiene Education, Curriculum, Clinical Teaching and Evaluation

by Patricia Damon-Johnson, RDH, MS



Patricia Damon-Johnson

Focus Area: Dental Hygiene Education, Curriculum, Clinical Teaching and Evaluation

1. A. Issue:

Implement the "Dental Hygiene Process of Care" (assessment, diagnosis, planning, implementation, evaluation) as the primary instructional strategy in the Clinical Dental Hygiene curricula. Use of this "process of

care" during the delivery of dental hygiene services supports the holistic approach to patient care. Further, development of the "process of care" into permanent educational and practice standards will aid the discipline in obtaining self-regulation which is crucial to the professionalization process.

B. Barriers:

1. Commission on Dental Accreditation of the American Dental Association does not address the "process of care" in the standards for dental hygiene programs in the U.S.
2. Organized dentistry does not recognize and support the concept of the dental hygiene diagnosis and therefore it is not taught in clinical dental hygiene curricula.
3. There is no textbook specific to dental hygiene addressing theory and practice using the "process of care" concept.

C. Resources:

1. The Canadian Dental Hygienists Association and American Dental Hygienists' Association to fund research for incorporating the dental hygiene process of care in baccalaureate curricula.
2. Investigate and adapt the model of "The Nursing Process" that has been utilized by the Nursing Profession in education and practice for over twenty years (Yura and Walsh, 1988).

D. Action Plans:

1. Conduct a survey of accredited dental hygiene programs in the United States and Canada to assess: 1) clinical curricula and practice standards; 2) philosophy of patient care; 3) student hours in pre-clinical and clinical education; and 4) student caseload requirements for patients, radiographs, and comprehensive services (if any).

2. Collaboration among researchers, educators and practitioners to evaluate and update the dental hygiene education accreditation standards to reflect current dental hygiene practice. Support of educational and practice standards should be communicated in written format to American Dental Hygienists' Association since the Commission on Dental Accreditation of the American Dental Association is currently (1990) reviewing the standards.

2. A. Issue:

Utilization of competency-based performance evaluation systems in Clinical Dental Hygiene Education that incorporated the "process of care" concept as well as a humanistic approach by employing self- and peer-evaluations.

B. Barriers:

1. Dental hygiene educators resistance to change with current clinical evaluation systems.
2. Lack of time and financial/administrative support in dental hygiene programs to develop, implement, evaluate and maintain the components of a competency-based evaluation system.

C. Resources:

1. Professional exchange among faculty from various health sciences disciplines and institutions regarding clinical teaching and evaluation systems.
2. Collaboration with faculty regarding research conducted on post-secondary teaching and learning, instructional evaluation and psychology.

D. Action Plan:

1. Conduct a workshop/seminar specifically designed for dental hygiene educators/administrators that 1) evaluate student performance in clinical settings; 2) design, implement and evaluate clinical evaluation systems; and 3) make pass/fail decisions about students. Workshop to include leaders with expertise in educational development, psychology, legal issues, clinical teaching and clinical evaluation.
2. Conduct a survey of accredited dental hygiene programs in the United States and Canada to determine 1) the components of the clinical evaluation system; 2) philosophy of clinical evaluation; 3) type and purpose of clinical evaluation system; 4) criteria for performance/objectives; 5) forms used for evaluation; and 6) methods for analysis and feedback to student (i.e., computer).

3. A. Issues:

Create innovative, flexible, accredited dental hygiene curricula that are accessible and appealing to students and can accommodate the various learning styles and individual needs of these students.

B. Barriers:

1. Limited resources in higher education (i.e., faculty manpower and time, budgetary reductions, facilities etc.) to develop and implement flexible programs.
2. Lack of information among educators and in the literature on innovations in dental hygiene curricula.
3. Fear that accredited programs with flexible curricula will de-emphasize baccalaureate education as the minimal entry level for dental hygienists.
4. Accreditation requirements for reporting major changes in curriculum discourages dental hygiene educators from implementing innovative and flexible curricula.
5. Fear that creating flexible dental hygiene curricula will not increase enrollment, and changing curricula is "reacting" to organized dentistry's claim of perceived shortage of dental hygienists.

C. Resources:

1. Review existing "non-traditional" or "flexible" curriculum models to determine successful innovative approaches for increasing the accessibility of dental hygiene programs.

D. Action Plan:

1. Develop flexible dental hygiene baccalaureate curricula to meet the needs of the non-traditional student through the 1) use of telecommunications for didactic courses, 2) use of summer and evening hours for dental hygiene clinic courses, and 3) use of independent educational activity.
2. Establish a network among dental hygiene program directors to exchange and disseminate information about the development, operation and evaluation of flexible curricula.
3. Commission on Dental Accreditation should clarify and simplify criteria and procedures for the reporting of program changes and re-evaluation.

4. A. Issues:

Modification in Dental Hygiene Education curricula to prepare students for the six roles of the dental hygienist:

- educator
- researcher
- clinician
- consumer advocate
- health promoter
- manager

B. Barriers:

1. Fear that a comprehensive program will increase the length of the curriculum making student recruitment difficult.

2. Organized dentistry's opposition to baccalaureate education for dental hygienists and expanded care options.

3. Lack of agreement among dental hygiene educators for what constitutes the educational preparation of a "professional" dental hygienist.

4. Organized dentistry's attempts to devalue formal education via its support of the preceptorship model of education.

5. Limited resources, i.e., budgetary retrenchment in higher education, faculty expertise, faculty manpower shortage, etc.

C. Resources:

1. ADHA/CDHA legislative action and power; resources; vision of the potential of dental hygiene as autonomous, self-regulating and self-directed; and financial support.

D. Action Plans

1. Encourage ADHA/CDHA to financially support, a) faculty research projects that address the six roles of the future dental hygienist, and b) scholarships for students who are enrolled in dental hygiene programs that educate to these six roles.

5. A. Issues:

Encourage dental hygiene educators to serve as professional role models to foster a positive self-image for the future dental hygienist.

B. Barriers:

1. Dental hygiene educators long term struggle with trying a) to market the value of dental hygiene to dentists and consumers, and b) to upgrade the quality of dental hygiene care, has caused burn-out in educators, practitioners, and researchers.

C. Resources:

1. Promote the excellent achievements of dental hygiene educators, researchers and practitioners to augment self-image and to provide role models for the future dental hygienist.

D. Action Plan:

1. Encourage articulation among students, faculty and practitioners to create an understanding of the many positive aspects and opportunity with dental hygiene as a profession.
2. Conduct research to determine dental hygiene practitioners own perceptions about dental hygiene.

6. A. Issues:

Foster communication among researchers, educators and clinicians to integrate dental hygiene theory and practice issues.

B. Barriers:

1. Lack of communication between clinicians and educators due to previous educational experiences.
2. Segregated work settings among educators, researchers, and clinicians.

C. Resources

1. Alumni associations of dental hygiene programs to provide financial support and manpower resources to dental hygiene programs.
2. Dental hygiene associations to organizationally and financially support yearly symposiums for researchers, educators and clinicians.

D. Action Plan

1. Conduct research in private dental hygiene practice settings with clinicians collaborating with researchers and educators.
2. Provide current literature directly to clinicians to get their feedback regarding practice interventions.
3. Develop "practitioner day" within clinical dental hygiene educational settings and encourage clinicians

from the community to share their expertise/experiences with future dental hygienists.

4. Conduct small volume peer study clubs for educators and clinicians to discuss current issues of dental hygiene theory and practice (1/2 day guest lecture and 1/2 day share session). ■

References

1. J. Bader, et al. *Task force on Innovation in Dental Hygiene Curricula*. J. of Dent. Ed. Vol 53: 12, 1989. p. 731.
2. H. Tura and M. Walsh. *The Nursing Process, 5th ed.*, Norwalk: Appleton & Lange, 1988.

Special thanks to Michele Darby, RDH, MS, Eminent Scholar, Old Dominion University, for her contributions to this report.

Research Initiatives Workshop Groups

Clinical Dental Hygiene Therapeutic Modalities and Technology

Facilitator: Irene Woodall

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L. Coben
S. Compton
B. Craig
J. Gibson
B. Hoath
M. Kinnear
K. Kopciuk
B. Long
D. Mancinelli Lyle
L. Mowat
S. Rhodes-Nesset
D. Skene
J. Suvan

Dental Hygiene Practice, Regulation and Quality Assurance

Facilitator: Patricia M. Johnson

S. Barry
J. Conklin
M. Goulding
J. Gurenlian
C. Hayter
J. Juchli
K. Peters
J. Ritchie
D. Samis
P. Schulte
B. Walker
M. Wilson

Epidemiology, Community Disease Prevention and Oral Health Promotion

Facilitator: Joanne Clovis

S. Amer
B. Brown
S. Cobban
J. Dahl
A. Eschenaur
J. Farrow
J. Fecho
D. Hardacre
M. Kenny
D. Matiushyk
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L. Rieger
S. Taggart

Dental Hygiene Education, Curriculum, Clinical Teaching and Evaluation

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T. Sigal
N. Webb

Symposium Acknowledgements

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Symposium Leaders

Denise M. Bowen, RDH, MS

Denise Bowen is an Associate Professor in Dental Hygiene at Idaho State University where she joined the faculty in 1976. She chaired the department from 1981 until 1988-89, when she was awarded a sabbatical leave and served as a consultant at the National Institute of Dental Research. Perhaps, Denise is most widely known for co-authoring a textbook entitled *Research Methods for Oral Health Professionals*. Currently, she chairs the Council on Research for the American Dental Hygienists' Association and the ADHA Institute Grant Review Committee, and co-ordinates the Oral-B Laboratories Dental Hygiene Research Grant Program in the United States. Professor Bowen has lectured internationally on the topics of periodontics and research methodology.

Janet Ross Kerr, RN, PhD

Professor and Past-Associate Dean, Undergraduate Education, Faculty of Nursing, University of Alberta, Janet Kerr is a past President of the Alberta Association of Registered Nurses and board member of the Canadian Nurses Association. She is actively involved in nursing research and currently holds two research grants-in-aid for projects on quality assurance in nursing and the history of nursing in Alberta. She was a founding board member of the Alberta Foundation for Nursing Research and is currently a reviewer for a number of nursing research journals and research granting agencies. She is the author of several books and numerous articles including her recently co-authored book, *Canadian Nursing: Issues and Perspectives*. Dr. Kerr has been awarded

a McCalla Professorship by the University of Alberta for the 1990-91 academic year.

Patricia M. Johnson, RDH, PhD

Patricia M. Johnson is the President of the International Dental Hygienists' Federation and past President and life-member of the Canadian Dental Hygienists Association. She currently holds a faculty appointment at the Seneca College Dental Hygiene Program and is head of her own consulting firm. She received her Diploma in Dental Hygiene and her BScD from the Faculty of Dentistry at the University of Toronto, and her MSc and PhD in Community Health (Health Policy and Administration) from the Faculty of Medicine at that same University. Dr. Johnson has numerous publications and presentations to her credit; her areas of interest are the organization and delivery of oral health services, professional regulation and gerontology.

Joanne Clovis, DipDH, BEd, MSc

Joanne Clovis has long had a commitment to Community Health and Health Promotion. She is a graduate of the University of Alberta and holds a Diploma in Dental Hygiene, a Bachelor of Education and a Master of Science. Her professional experience includes a wide variety of private practice, public health, teaching and research opportunities, and active involvement in the provincial/national dental hygienists' associations. The greatest part of her career was based in Alberta as a provincial health consultant. More recently she accepted a full-time position in the School of Dental Hygiene at Dalhousie

University in Nova Scotia and has just been appointed as Director of that program.

Patricia Damon-Johnson, RDH, MS

Patricia Damon-Johnson is an Associate Professor and Director of Clinical Affairs in the School of Dental Hygiene and Dental Assisting at Old Dominion University in Norfolk, Virginia, where she joined the faculty in 1979. She received both the BS and MS degrees in Dental Hygiene from Old Dominion University. In addition to the many educational responsibilities, she has continued her employment in private practice dental hygiene. She has made presentations at national and state meetings regarding the topics of clinical teaching, clinical evaluation, innovations in curricular design, and economic value of dental hygiene practice. She is also a co-author of a chapter in *MOSBY'S Comprehensive Review of Dental Hygiene*, 2nd edition in press.

Margaret M. Walsh, RDH, MS, EdD

Dr. Margaret Walsh is Associate Professor and Chair of the Division of Dental Hygiene and Preventive Dentistry, Department of Dental Public Health and Hygiene of the University of California School of Dentistry in San Francisco (UCSF). She received her BS in Dental Hygiene from UCSF, her MS in Dental Hygiene from Columbia University, her MA in Educational Evaluation from San Francisco State University, and her Doctorate in Education from the University of San Francisco. Dr. Walsh is the author of many journal articles on dental hygiene care, with a special emphasis on non-surgical

techniques for preventing and treating periodontal diseases. In recent years she and the UCSF Dental Hygiene faculty have been engaged in theory building directed toward the development of a conceptual framework explicitly tailored to the dental hygiene profession.

Irene R. Woodall, RDH, PhD

Irene Woodall practiced dental hygiene for six years (four years in periodontal practice), taught dental hygiene and directed dental hygiene programs at both the community college and university levels for twelve years, and has worked for the past several years through her firm to provide continuing education and to write. She is the lead author for *Comprehensive Dental Hygiene Care* and *Legal, Ethical, and Management Aspects of the Dental Care System*, currently in their third editions, and is well known for her stimulating editorials in RDH magazine. She has taught dental care systems, human behaviour, and practice management to dental students while on the faculty of the University of Pennsylvania School of Dental Medicine. Dr. Woodall currently holds a faculty appointment at the University of Colorado School of Dentistry and is Director of Clinical Studies at Vipont Pharmaceutical, Inc. She has a certificate in dental hygiene, a bachelors degree in social sciences and philosophy, a master of arts degree in communications, and a doctor of philosophy degree in organizational development and human relations. In June 1988 she received the Warner-Lambert/ADHA award as "Change Agent" for her continuing efforts to create new opportunities for dental hygiene and for hygienists to identify essential goals for themselves and their profession. This past April she was honoured as alumna of the year at the University of Detroit School of Dentistry.

Janice F. L. Pimlott, DipDH, BScD, MSc

Janice Pimlott is an Associate Professor with the Division of Dental Hygiene, Faculty of Dentistry, University of Alberta. Ms. Pimlott co-ordinates several academic programs including Dental Hygiene Theory, Periodontics, and Preclinical and Clinical Practice. Ms. Pimlott graduated from the University of Toronto with a Diploma in Dental Hygiene, a Bachelor of Science in Dentistry, and a Master of Science. She was formerly Assistant Professor, School of Dental Hygiene, University of Manitoba. She is keenly interested and involved in dental research and has many recent publications. Ms. Pimlott is active in presenting continuing education courses and research presentations at provincial, national and international levels.

Barbara A. Zier, DipDH, BEd, MEd

Barbara Zier is Professor and Chairperson, Division of Dental Hygiene, Faculty of Dentistry, University of Alberta. Barbara joined the teaching staff in the Faculty of Dentistry in 1973. She became Chair of the Dental Hygiene Division in 1982. In addition to administrative and teaching responsibilities, Barbara is pursuing PhD studies in educational administration. Her most recent publications and research interests relate to networking, dental education, and the link between theory and practice. Professor Zier has given presentations at provincial, national, and international levels. ■

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Ellen Brownstone
1990-91 Recipient

1990-1991 Research Fellowship Recipient

Ellen Brownstone, BA, DipDH, MEd has been selected as the fourth recipient of the CDHA Research Fellowship. This \$3,000.00 fellowship is awarded annually. Selection is made from candidates who are Canadian dental hygienists enrolled in a research-oriented Masters or Doctoral program.

Ellen is a 1976 graduate of the University of Manitoba School of Dental Hygiene. She obtained a Bachelor of Arts degree in 1974, and a Master of Education degree in 1982, both from the University of Manitoba.

Professor Brownstone has held an academic position at the University of Manitoba School of Dental Hygiene since 1978, and has just completed a five-year term as the School's Director. She has been granted a two-year administrative/study leave for 1990-1992 to carry out full-time study.

Professor Brownstone is presently enrolled in an Interdisciplinary PhD program at the University of Manitoba. Her research will include an investigation of the relationship between the process of dental hygiene education and the achievement of professional status by Canadian dental hygiene diplomates.

Progress updates from past CDHA Research Fellowship Recipients

Bonnie Trodden (1988-89)

"I was on full-time unpaid study leave from the University of Manitoba, School of Dental Hygiene, from August 1, 1988, until August 1, 1990. During that time I was working towards the completion of my PhD.

My research topic is an epidemiological study of the dental health of Native (Swampy Cree) children compared to Manitoba rural children, six and thirteen years of age. The Swampy Cree Tribal Council administer their own dental program on six Manitoba reserves, which is funded by both the Federal and Provincial governments, and employ their own dentist and dental assistants.

The first segment of my project, which is now complete, involved analysis of the S.C.T.C. data. I presented my final report to the Swampy Cree Tribal Council in February, 1990.

The second segment involved collecting similar data for children treated by the Manitoba Children's Dental Program. These two populations will then be compared with previous surveys done in Manitoba (1976, 1982) as well as other provincial surveys."

Barbara Zier (1989-90)

"In December 1989, I successfully completed my PhD candidacy examination. This achievement marks the completion of 14 course requirements, development and defence of my research proposal and demonstrates mastery of the educational administration body of knowledge. My data collection and analysis are complete and I am in the process of drafting (and

redrafting) my dissertation. I anticipate still at least another 6 months - 1 year before I will do my final defence. In the meantime, CDHA monies have provided much needed support primarily directed in part toward tuition, books and transcription costs.

I look forward to that time when I can submit a final report of my activities. I am convinced that the research fellowship is a significant CDHA initiative towards dental hygiene professionalization and once again thank CDHA for the award." ■

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and

Dr. Miriam Stewart - Professor, School of Nursing, Dalhousie University and author of
Community Health Nursing in Canada, 1985

"Current Perspectives on Health Promotion in Canada"

p.m.:

after lunch a panel discussion including our morning speakers
with focus on Trends, Issues and Solutions

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"Facing the Future"

Professor Joanne Clovis - Director, School of Dental Hygiene, Dalhousie University
Ms. Sharon Amer - Advisor, Dental Health Standards, Health & Welfare Canada

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Workshop Facilitator:

Ms. Lucy Brunet - External Consultant on Federal Government Steering Committee, Oral
Health Promotion

Alternate, all-day
Presentation:

"Recognition of serious oral disease"

Dr. J. Natiella - Chairman, Department of Stomatology and Interdisciplinary Sciences,
S.U.N.Y., Buffalo, New York

*"Is it fact or myth that we in dentistry presently employ "state of the art" methodologies in
disease detection? For certain diseases such as oral cancer cure rates directly linked to early
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road we are to take into the year 2000."*

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CDHA Board of Directors (observers welcome)

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First Teeth: the award-winning program from the Canadian Dental Association that helps you help parents care for their children's dental health. Supervised by a team of experts in children's dental care, sponsored by Colgate Junior, First Teeth is the CDA's most popular program ever. And its best-loved.

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Speakers' Bureau

CDHA is calling for speakers to facilitate workshops on professional development. The purpose of the Speakers' Bureau is to form a resource of individuals who would be willing to lead sessions for the dental hygiene associations, allied health professional associations and others. All professionals and topics are welcomed. For example: health care analysis, wellness and health promotion, financial planning, nutrition, forensics, etc. Send your name and area of interest or specific expertise (as well as any suggestion of others) to:

The Speakers' Bureau, CDHA Central Office
1018 Merivale Road, Suite 201
Ottawa, Ontario K1Z 6A5

Call for CDHA Volunteer Corporate Relations Co-ordinator

As Corporate Relations Co-ordinator for CDHA you will employ your interpersonal and communications skills, marketing ability and initiative to:

- act as liaison between CDHA and the dental industry with respect to public relations, advertising, sponsorship
- promote CDHA projects, activities and events to companies
- co-ordinate dental hygiene projects with funding from sponsors
 - work with CDHA councils to identify projects suitable for corporate sponsorship, provide lists of companies and contact names, and advise on corporate protocol and funding mechanisms.

This position, open to CDHA members, begins immediately. Orientation to the position will be provided. You will be invited to attend the CDHA Planning Session in Ottawa, January 1991. All expenses for this position are covered by CDHA.

Please send a résumé with covering letter to:

Canadian Dental Hygienists Association

Attn: Myrna Frizell, President
1018 Merivale Road, Suite 201
Ottawa, Ontario K1Z 6A5

CDHA Insurance Program

For Information Contact:

Life, Disability and Health

Gordon Campbell
Analyst
Mutual of Omaha
500 University Avenue
Toronto, Ontario
M5G 1V8
Tel: (416) 598-4321

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Peter Westcott
Association Group Co-ordinator
The Citadel Assurance
1075 Bay Street
Toronto, Ontario
M5S 2W5
Tel: (416) 928-8500

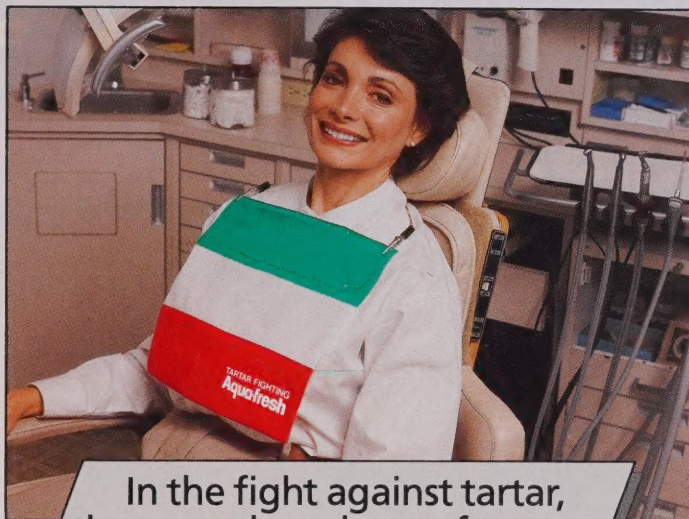
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Toronto, Ontario
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Recommend regular brushing with advanced Tartar Fighting Aqua-fresh to help maintain the integrity of your patients' teeth and gums between visits. It's one of the best allies you have in the fight against tartar.

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[†] Supragingival Calculus Formation Study: "A Study to Compare the Effects of Two Dentifrice Products on Adult Supragingival Dental Calculus Formation" 1989. Data on file, SmithKline Beecham Canada.

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The bristles on the outside are shorter than the center ones, so that the longer center bristles can more easily reach the sulcus. They slip freely under gingival margins to clean where plaque build-up begins.

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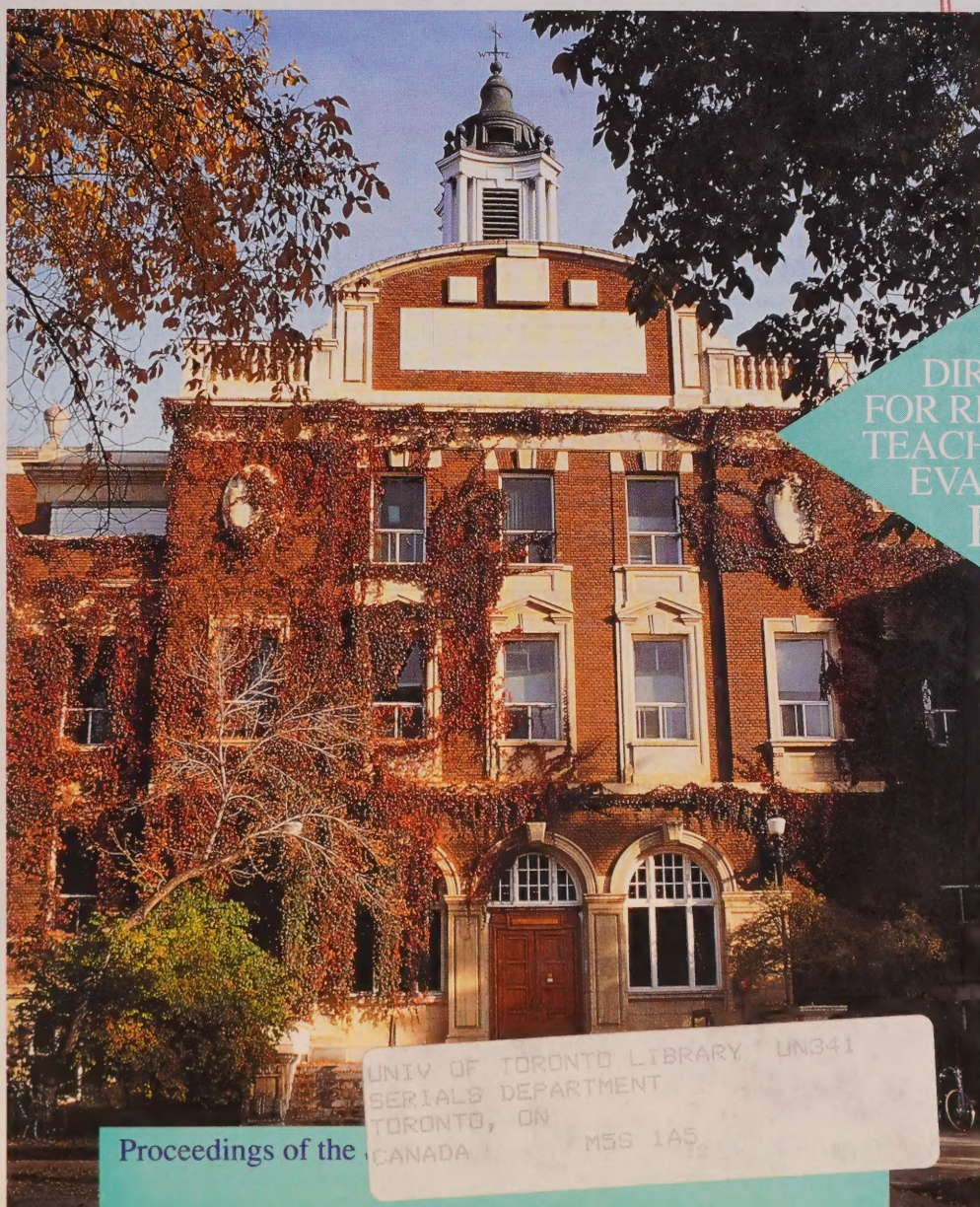
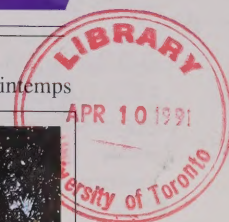
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Spring 1991 printemps

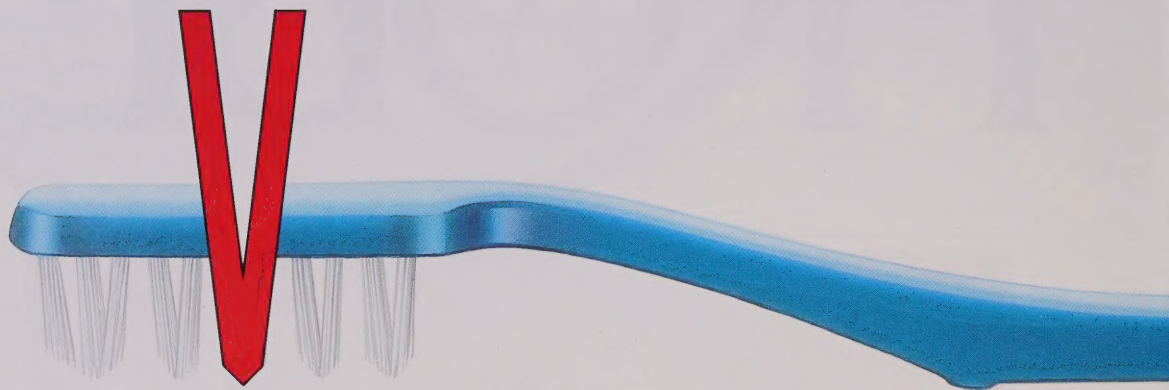


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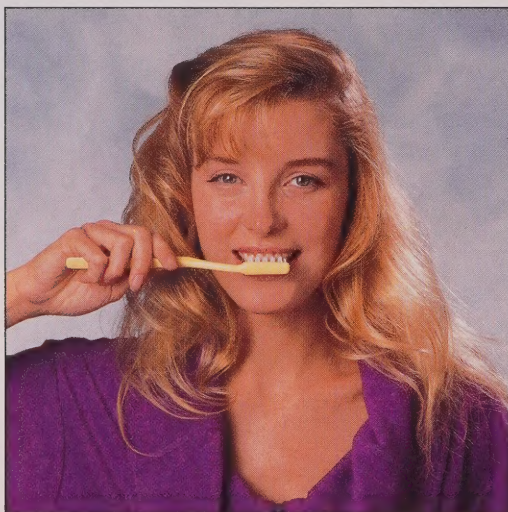
VICTORY OVER PLAQUE



THE JORDAN* V. THE BETTER PLAQUE FIGHTER

THE PROBLEM

Normal toothbrushes can't reach the interproximal areas. Plaque build up in these areas can lead to caries, gingivitis and eventual tooth loss.



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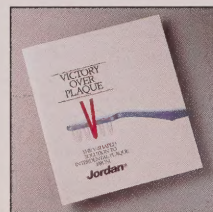
bristle shape, handle shape, and balance to provide better plaque removal. But it is especially the V-shaped tufts with rounded bristles which give this toothbrush its clinically proven superiority. This unique design allows the bristles to reach the difficult interproximal spaces more effectively and efficiently than other brushes.

Jordan V toothbrushes are also available as a Compact V-Soft for your patients with access limitations.

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Montreal, Quebec
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Jordan*
CLEANER TEETH. GUARANTEED

In Memory of Barbara Ann Zier 1949 - 1990

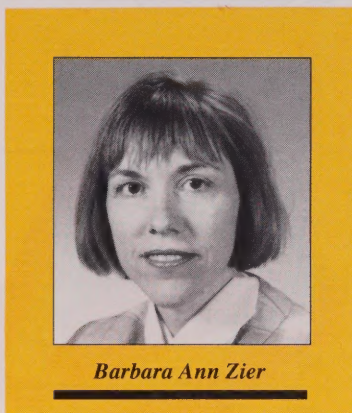
Barbara Zier, Professor and Chairman of the Division of Dental Hygiene at the University of Alberta, passed away tragically on December 15, 1990.

Born in Oliver, British Columbia, she began her career following her graduation with a dental hygiene diploma from the University of Alberta in 1969. After a brief period of employment in private practice and public health, Barbara started her teaching career in 1972 with an appointment to the dental assisting program at the Northern Alberta Institute of Technology. In addition to her instructor role she developed and implemented the first program in expanded functions for dental assistants in Alberta. In 1973 she joined the School of Dental Hygiene, University of Alberta, as an Assistant Professor. Her outstanding leadership capabilities were recognized by her appointment to the Chairmanship of the Division of Dental Hygiene within nine years of joining the University of Alberta faculty.

At the University of Alberta she was a noted scholar and valued colleague. She designed and sought the implementation of the BScDH (Dental Hygiene) degree that is currently under consideration. As an educator Barbara not only ensured excellence in the Faculty for which she had her primary role but she worked towards those same standards throughout dental hygiene education.

She was a member of many accreditation survey teams for the Canadian Dental Association Commission on

Education and was active in the Association of Canadian Faculties of Dentistry, serving in several capacities. Barbara participated in and led national and international education workshops, her efforts with the American Association of Dental Schools and the American Dental Hygiene Directors group, brought credit not only to herself and the University of Alberta



but to all of Canada. Her dentistry and dental hygiene colleagues valued her ability to analyze and discuss important issues clearly and productively.

Her emphasis on pedagogical skills in dental hygiene education led her to pursue degrees in education with a BEd (cum laude) in 1975, followed by a MEd being conferred in 1977. She was in the final process of preparing a PhD dissertation at the time of her death.

One of the dental hygiene frontiers which Barbara pioneered was that of research. Nationally and internationally she was a respected researcher. As

a member of the International Association for Dental Research and the American Association of Dental Schools, she presented and published numerous research papers.

It is an impossible task to highlight all of Barbara's professional contributions. However, her gifts of humanity outweighed her outstanding professional accomplishments. Barbara's sensitivity was evidenced in her dealing with students. She actively listened, guided and pursued the issues that were important to them. One student recently wrote— "Our magnificent professor, her warm smile and gentle spirit is what we remember the most." Her love of family was her most cherished pride and joy. Her children, Erin (15), Jarett (10), and Kendal (7), along with her mother and brothers and sisters, cherish the memories of the special years they shared with Barbara.

Barbara's leadership was by example. She reached for excellence and she inspired others to do likewise. She has left us enduring gifts of a body of knowledge and attitudes about dental hygiene, and the example of a woman who pursued a worthy goal with diligence, warmth and integrity.

To perpetuate her name and her ideals in dental hygiene education, the Barbara Ann Zier Scholarship Fund has been established. Enquiries or contributions can be directed to Mrs. Eleanor McIsaac, Room 1039, Dentistry/Pharmacy Centre, University of Alberta, Edmonton, Alberta, Canada, T6G 2N8.



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There's been a lot of talk about xylitol lately. Like many other health professionals, you may have heard about it. But do you really know about it? Perhaps it's time you did.

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Xylitol is, quite simply, a natural-source sweetener. However, extensive research conducted over the last decade shows that xylitol cannot be metabolized by decay-causing oral microflora. Therefore, xylitol does not promote tooth decay.

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Tell your patients about it. Professionals everywhere are talking about xylitol.



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Because Trident with xylitol does not promote tooth decay, it can play an important role in your patients oral hygiene programme. It's especially valuable as a replacement for sugary snacks.

A special offer from Trident.

We invite you to order Trident sample packs for use in your own practice. And do some chatting of your own.

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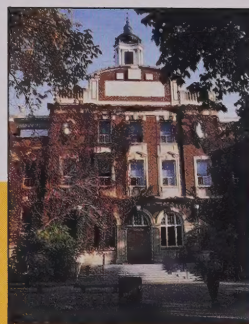
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President's Message



*Myrna Frizell
President*

In January the CDHA Board of Directors met in Ottawa for the Annual Council Planning Session. At this meeting the Board had the opportunity to review the Association goals and priorities and then, within the council structure, to evaluate the activities which have been completed to date, monitor projects which are in progress, and develop proposals and plans for projects and activities they would like to undertake over the next one to three years.

The enthusiasm and commitment of the Directors you send to CDHA through your provincial associations, was most evident. As the Executive Council reviewed the project proposals which were submitted, every one clearly would contribute toward our prioritized goals for CDHA. The funding required to carry out these proposed projects and activities, however, far exceeds the anticipated revenue of the Association.

The Executive Council now faces the challenge of making recommendations for proceeding with the proposed projects and developing a budget, based on those recommendations, for approval by the Board of Directors.

Because each of the Councils deals with identified issues and needs of our members and our profession, some

funding must be allocated to each of the areas of professional development, practice and regulation, public relations and member services. Where funding cannot be met through anticipated Association revenue (which is based mainly on membership fees), should the project be deemed suitable, we will seek corporate sponsorship. Other projects or activities will need to wait for funding in future years, or be developed and budgeted for over a longer period of time than proposed.

The final approval for 1991-92 Association activities and their funding will come from the Board of Directors in June at the Annual session. Prior to this approval the Board will evaluate our past year's activities and reaffirm the Association's goal and priorities. You, as a member of the Canadian Dental Hygienists Association, will receive an Annual Report following this meeting. Through this planning and evaluating process, the Board of Directors demonstrates its accountability to the members of our Association.

As an individual member of CDHA what does this mean to you? I believe it is important that you be aware of the process that is used in deciding how your membership dollars are going to be spent.

What might you, as a member, expect from CDHA in the coming year? Although final approval will come from the Board of Directors in June, a "sneak preview" would suggest:

- A major step toward portability for dental hygienists in Canada with the availability of a National Certification Certificate for CDHA members, and the development of a National Certification Examination.

- Continued support for provincial associations pursuing self-regulation
- A professional development focus on the older adult, including the cataloguing of continuing education courses and material available to dental hygienists and a professional conference.
- An exciting new theme with supporting materials for the National Dental Hygiene Campaign in October.
- Further development of a lending library of audio-visual aids for CDHA members and a listing of other resources available to you through other sources.
- Opportunities for CDHA members to contribute to the promotion of oral health and the profession through media projects.
- Promotion and recognition of student membership activities.
- Continued improvement in the quality of member services and benefits.

As a member of CDHA you have both the right and the responsibility to help provide direction in the planning for the Association. You may have input in several ways. Consider active involvement with your association at the local or provincial level, as it is through this process that leadership comes to the CDHA Board of Directors. Share your ideas and concerns with the members of the CDHA Board in your province to assist them in assessing, planning and evaluating our national activities. Write to me, as your President, to let us know how you feel about what we are doing on your behalf and in the interest of the health of the Canadian public.

WE KNOW HOW DIFFICULT IT IS TO GET YOUR PATIENTS TO FIGHT PLAQUE.



It's a message that you've been trying to drum into your patients' heads for years: to prevent gum disease it's imperative to brush and floss. ■ A basic tenet of oral hygiene, right? Logical. Irrefutable. ■ Yet some people still don't take a blind bit of notice. You see the signs of their neglect every day. ■ So what are you to do? ■ Continue to hammer away at them every six months. ■ And at the very least, encourage them to use Listerine Antiseptic. ■ By rinsing with Listerine for 30 seconds, twice a day, (that's

in addition to their usual oral hygiene), your patients can reduce plaque and gingivitis by as much as 34%^{1,2,3,4} over brushing alone. ■ Do you still need more proof? Listerine is the leading over-the-counter rinse to have earned the American Dental Association Council on Dental Therapeutics' Seal of Acceptance for proven antiplaque/antigingivitis efficacy.⁵ ■ We're not kidding ourselves. Convincing your patients to fight plaque and gingivitis is clearly an uphill battle. But Listerine may just give them the push they need.

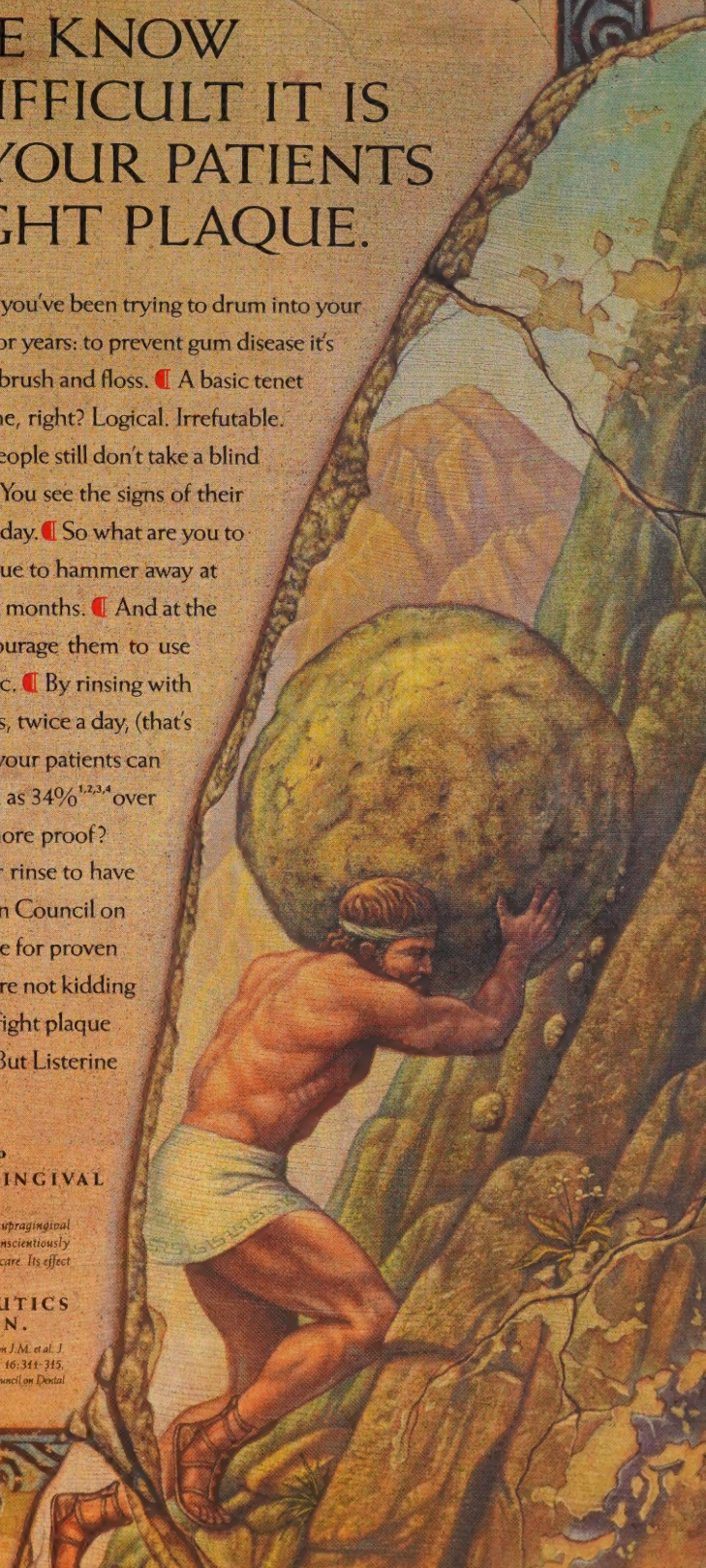
**ACCEPTED BY THE ADA TO HELP
PREVENT AND REDUCE SUPRAGINGIVAL
PLAQUE AND GINGIVITIS.**



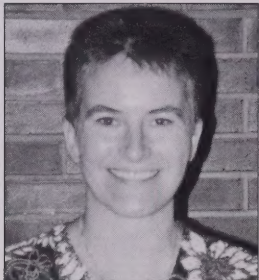
"Listerine has been shown to help prevent and reduce supragingival plaque accumulation and gingivitis when used in a conscientiously applied program of oral hygiene and regular professional care. Its effect on periodontitis has not been determined."

**COUNCIL ON DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION.**

REFERENCES: 1. Lister J.B. et al. *CLIN. PREV. DENT.* 5:12-16, 1983. 2. Gordon J.M. et al. *J. CLIN. PERIODONTOL.* 12:697-704, 1985. 3. DePaola L.G. et al. *J. DENT. RES.* 16:344-345, 1989. 4. Overholser D. et al. *J. CLIN. PERIODONTOL.* 17:575-579, 1990. 5. Council on Dental Therapeutics Accepts Listerine. *J. AMER. DENT. ASSOC.* 117:515-516, 1988.



Corporate Relations Officer



Joan Degan, has been appointed Corporate Relations Officer for the Canadian Dental Hygienists Association. Joan resides in Ottawa and has been active for many years at the local, provincial and national level including Corporate Funding Chair for the International Dental Hygienists' Federation Symposium, 1989.

Ms. Degan's responsibilities with CDHA will include all aspects of corporate relations including the development of comprehensive policy direction for our Association. We welcome Ms. Degan and look forward to her guidance in enabling our Association to promote oral health and our profession to the public.

CDHA Board of Directors

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 Diane McCambly, Ontario
 Sue Raynak, Ontario
 Suzanne Knox, Ontario
 Denis Cote, CFDS
 Denise Doiron, Prince Edward Island
 Lynne Viczko, Saskatchewan

GST Exemption For Dental Hygienist Services

Dental hygienists' services are exempt from GST whether they are an employee or have an independent contractor status.

Working for a dental practice, a professional management company, a hospital, a corporation, a government or a government agency does not alter this exempt status.

Dental Hygienists' services are not limited to services rendered to an individual and may include cosmetic dentistry procedures where permitted.

New voices for CDHA!

In January, at the annual planning session CDHA welcomed 9 new directors to our board. Their input over the next three years will be extremely valuable in providing direction for our continuing growth as a profession. Acknowledgement of volunteers to councils is also in order. These dental hygienists include council advisors; Sheryl Feller, Marnie Forgay, Signe Arason, Ellen Brownstone, Dale Scanlan, Conference Co-ordinator; Laura McDonald, Health Promotion; Jo Gardner, Data Research; Dianne Gallagher, National Certification; Nancy Prowse, Ethics; Nancy Keselyak, Continuing Education; Carole Welland, Education Information; Dianne Lachapelle, Fellowship Committee.



Back row, L to R: Borowko, Garant, Cote, Kitchen & Doiron.
 Front row, L to R: Raynak, Kirkpatrick, Mowat & McCambly.

Late Arrival of Winter Explorer

We apologize to members for the delayed delivery of the Winter Explorer. Distribution of this edition was out of our hands. We hope that reading the Explorer will provide you with the necessary background to our national public awareness media campaign sponsored by CDHA/Pfizer.

Public response, at time of press, is overwhelmingly positive.

WE SHOULD HAVE OUR HEAD EXAMINED.

It is, after all, the single most important feature of any toothbrush.

That's why we've taken such time and care designing ours.

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Then we grouped them in our improved bristle layout.

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And thirdly, we gave our bristles the best end-rounding in the business.*

Helping Oral-B to minimize gingival trauma.

Finally, we rounded the corners of our brush head.

Reducing the risk of gum damage and increasing patient comfort.

As you can see, any toothbrush of merit should offer its patients soft, gentle and effective cleaning.

If it doesn't, maybe it should have its head examined.



USED AND RECOMMENDED BY
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*According to independent research study, Quintessence International, Vol. 19, Nov. 2/1988. For a copy of this report or for more information please write: ORAL-B LABORATORIES INC., 274 LAKESHORE ROAD EAST, MISSISSAUGA, ONTARIO L5E 1E4.

STOP WRITING DIRTY NOTES



If you're using an average, everyday pen that promotes cross contamination, important

here's some information for you to chew on. Hu-Friedy has just designed the Pen-Probe™, the first sterilizable instrument to combine a pen and a probe.

This important breakthrough in instrument technology greatly improves your infection control procedures,

allowing you to finally write off a weak link in your asepsis chain. It also saves you the time you would have otherwise spent picking up an instrument, taking a measurement, putting down the instrument, picking up a pen, recording the measurement...

Hu-Friedy's new writing instrument is available as either the Pen-Probe, which comes in a wide selection of popular Hu-Friedy probe styles, or you can select the sterilizable pen without the probe.

This further ensures that you will never write another dirty note.



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National Dental Hygiene Campaign 1991

The Public Relations Council is already planning the 1991 campaign—its never too early to start! So now would be a great time to get together with other enthusiastic campaigners to discuss possibilities. Watch your mail for helpful tips and ideas for planning your campaign. This year's campaign will run from Tuesday 15 October to Monday 21 October.

CDHA greatly appreciated F.W. Horner's sponsorship, and tremendous support of last year's very successful campaign. Thank you F.W. Horner!

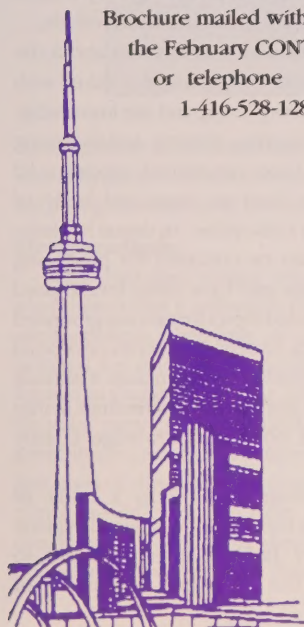
ODHA Spring Convention 1991

The Ontario Dental Hygienists Association is holding its Annual Spring Convention, May 2 and 3 at the Holiday Inn, downtown Toronto.

Guest speakers are Dr. Jane Fulton, David K. Neely and W.O. Trina Roberge.

For further information, please refer to the ODHA Convention

Brochure mailed with
the February CONTACT,
or telephone
1-416-528-1283.



CDA Statement Concerning Teeth Whiteners

CDA is aware that whitening or bleaching claims are being made by a number of new products containing various types of oxygenating agents as the whitening or bleaching ingredient. Most of these products are in the form of a liquid or gel that is applied (directly by the dentist or by the patient) via a mouthguard tray and worn for several hours daily; others are toothpastes, one of which may be combined with a gel while some utilize a multistep process consisting of a mouth-cleansing agent, a gel, and one or more polishing creams. Some products are intended to be prescribed by dentists, while others are sold over the counter.

The Committee on Community and Institutional Dentistry has written to the Health Protection Branch of Health and Welfare Canada and asked for its position on these products. Clarification is being sought as to whether these products may be considered cosmetics, devices, or drugs under federal regulations. Products marketed as cosmetics, for example, may escape specific regulation.

These products may be safe and effective. However, concern has been expressed because manufacturers do not have long-term safety data available. Some published scientific studies show that regular use of oxygenating agents may damage temporarily the soft tissues of the mouth, and may delay the healing of already damaged tissue. Other studies show that the use of these agents may cause varying degrees of damage to the pulp of the teeth.

The CDA will advise members of the results of the CDA communication with Health Protection Branch of Health and Welfare Canada. In the interim, although light to moderate aging stains may be visibly reduced by products containing oxygenating agents, the need for longer-term safety studies would suggest a cautious approach. Candid patient disclosure and adequate advice on home care are essential if clinicians choose to use or recommend these products.

October 1990

Committee on Community & Institutional Dentistry

Partnership Helps College Program

When Cambrian College announced earlier last year that the English-language Dental Hygiene program would be postponed for one year, the members of the Sudbury and District Dental Society showed their support for the College and the program by generously agreeing to contribute their time for the then upcoming year. The dollar equivalent for the time which will be spent monitoring and assisting with the clinical component of the Dental Hygiene program is \$30,000.

As a result of the support of the Sudbury and District Dental Society, as well as of the Ministry of Northern Development and Mines and the Ministry of Colleges and Universities, the pro-

gram has become more financially viable and will continue to run.

The Ministry of Northern Development and Mines provided \$150,000 in funding for the enhancement of the dental laboratory facilities through clinical capacity expansion, and the Ministry of Colleges and Universities approved an increase in the program's enrolment quota from 17 to 25.

"This partnership of the professional sector, government, and education is certainly a progressive one. It is indicative of their commitment to economic development through education," commented Cambrian President Glenn Crombie. "We very much appreciate the support and assistance of all the constituencies."

Panel Discussion

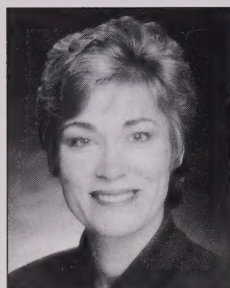
Theory Development in Dental Hygiene

Margaret M. Walsh, RDH, MS, EdD

Associate Professor & Chair, Division of Dental Hygiene & Preventive Dentistry

Department of Dental Public Health and Hygiene, School of Dentistry

University of California, San Francisco



Margaret M. Walsh

Professions, by definition, draw on a well-defined and well-organized body of knowledge that serves as a foundation for education, practice, and research (Reynolds & O'Morrow 1985). Currently, however, the body of knowledge in dental hygiene is not well organized. Consequently, dental hygiene as a scientific discipline is not well recognized. The basic components of a discipline include its science, a distinct body of knowledge, and its practice, the activities of the practitioners. A model of the discipline of dental hygiene proposed by Darby and Walsh (Darby 1990) is depicted in Figure 1. The double arrow drawn between the science and practice of dental hygiene indicates the symbiotic relationship that must exist between dental hygiene research and practice. The science of dental hygiene is the theoretical basis for practice, and is validated and

constantly refined through research and theory development. Dental hygiene practice, in turn, provides valuable data for theory development and must be the source and testing ground of theory. Thus, to gain recognition as a discipline, dental hygiene needs to articulate the knowledge domain of dental hygiene science that underlies the art of dental hygiene practice.

Indeed, many dental hygiene scholars have proposed that a key focus of dental hygiene should be the development of knowledge to validate and extend dental hygiene practice (Darby 1978, 1981, 1983, 1990; Bowen 1983, 1988; Brine & Rossman 1979; Carr & Entwistle 1984; Walsh 1985, 1988; Wayman 1985). However, despite the increase in the number of research manuscripts authored by dental hygienists in the last decade (Darby 1990), dental hygiene seems to be doing far too little about developing a body of knowledge in an orderly fashion. We still lack the organizational framework — a metaparadigm and conceptual models — that would provide a foundation for the development of theory and a body of knowledge for the discipline of dental

hygiene. Darby points out that "other disciplines have long recognized the importance and significance of focused research efforts...". As new information is discovered about the phenomena of the discipline, it is linked with the existing theory to expand the knowledge base. It is this linking, relating, and clustering of concepts (into conceptual models and theories) that form an organized body of knowledge in a discipline. In dental hygiene, researchers can be criticized for producing isolated studies and have often investigated multiple unrelated topics that are not grounded in theory. Lack of dental hygiene conceptual models and related theories makes it difficult to know what to test, and how findings fit into an organized body of knowledge (Darby 1990).

In attempting to develop a body of knowledge for the discipline of dental hygiene in an orderly fashion, it is important to understand the structural hierarchy of

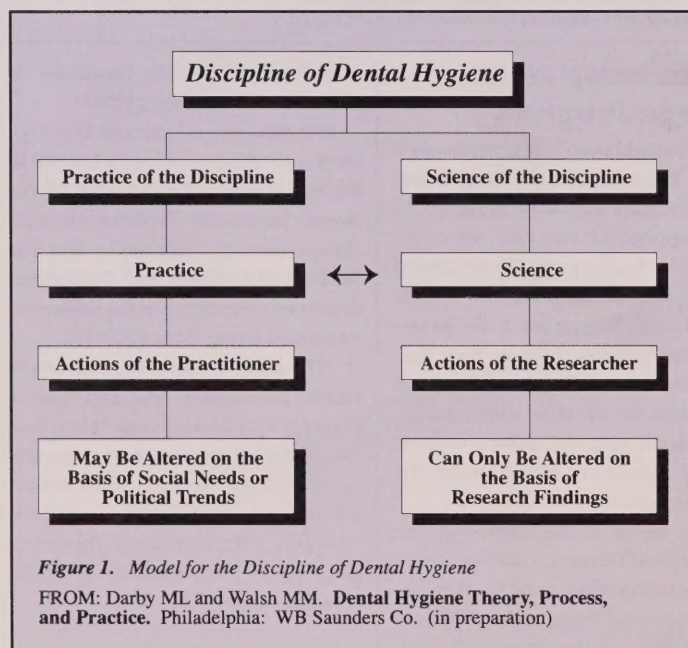


Figure 1. Model for the Discipline of Dental Hygiene

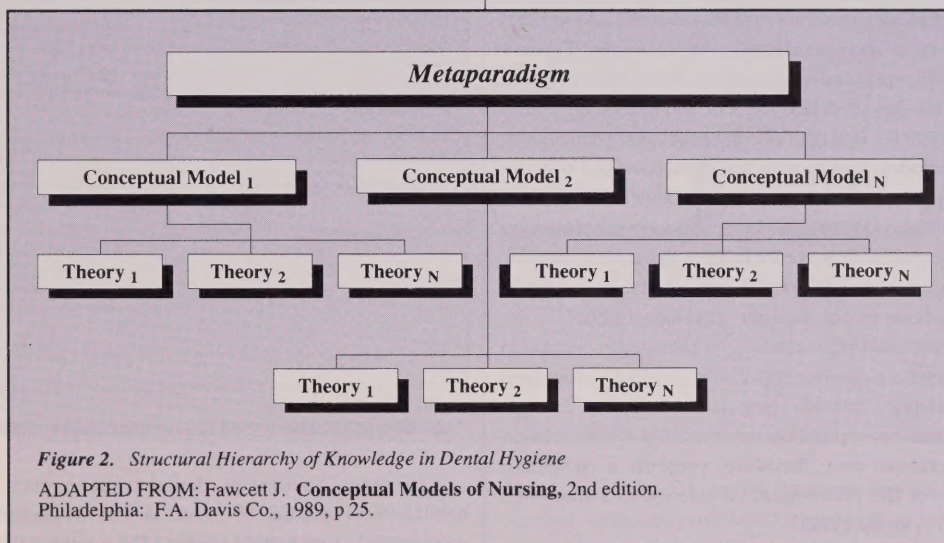
FROM: Darby ML and Walsh MM. **Dental Hygiene Theory, Process, and Practice**. Philadelphia: WB Saunders Co. (in preparation)

knowledge in disciplines (Figure 2). The body of knowledge in any discipline usually progresses from a single metaparadigm to multiple conceptual models. From these models are derived multiple theories, which guide the research direction within the discipline. Thus, the body of knowledge in the discipline of dental hygiene would progress from a single metaparadigm to multiple conceptual models and multiple theories derived from each model (Darby 1990).

The purpose of my presentation is to stimulate interest among dental hygiene educators, researchers, and practitioners in establishing a metaparadigm and conceptual models for dental hygiene as a framework for the evolution of the discipline. I will begin by defining the terms metaparadigm, conceptual model, and theory, and will discuss them in the context of structural hierarchy of knowledge within disciplines. Finally, I will present for your

in the same concepts. However, the unique focus of each discipline with regard to the concepts is specified by its particular metaparadigm (Fawcett 1989). For example, Fawcett (1989) point out that both sociology and psychology are concerned with behaviour, but that sociology focuses on social behaviour while psychology emphasizes psychological behaviour.

Now, what about dental hygiene? Based on close scrutiny of the dental hygiene literature, Darby and Walsh have identified four concepts central to dental hygiene that could form a metaparadigm for the discipline of dental hygiene. This work is developmental, and I present it here for your thoughtful consideration and response. Our suggested metaparadigm concepts are: the Client, the Environment, Health/Oral Health, and Dental Hygiene Actions (Figure 3). We chose these concepts because we believe they define the domain of dental hygiene, which includes the recipient of



consideration a metaparadigm and conceptual models of dental hygiene developed recently by dental hygiene scholars, using this structural hierarchy of knowledge approach.

Metaparadigms

Each discipline singles out certain major concepts or phenomena that it will study from a unique perspective. A metaparadigm, therefore, is composed of the concepts selected for study by a discipline and of statements, also known as propositions, that define the concepts in a global abstract manner (Kuhn 1977). Thus, a metaparadigm presents the most global perspective of a discipline and is the first level of distinction between disciplines, because disciplines are differentiated from each other by virtue of the concepts or phenomena they study. It is not unusual, however, to find that more than one discipline is interested

dental hygiene care (the Client); the situation in which the client and dental hygienist find themselves (the Environment); the purpose for their being together (Health/Oral Health); and the interventions which will affect change in the oral health status of the client and move the client closer to oral wellness (Dental Hygiene Actions). We have defined these four concepts and our metaparadigm in an abstract, global manner as follows:

Client refers to the recipient of dental hygiene actions, who may be an individual, a family, a community, or a particular group.

Environment refers to the recipient's significant others and surroundings, as well as to the setting in which dental hygiene actions occur.

Health/Oral Health refers to the degree of general and oral wellness or illness of the recipient of dental hygiene care.

Dental Hygiene Actions refer to the interventions provided by a dental hygienist on behalf of, or in conjunction with, the recipient to promote oral wellness and prevent oral disease.

These four metaparadigm concepts can be defined, developed and expanded in numerous ways to permit conceptual models of dental hygiene to evolve. Each conceptual model will determine how each of these metaparadigm concepts are further defined.

Conceptual Models

Most disciplines have only one metaparadigm and many conceptual models derived from the metaparadigm. A specific conceptual model consists of a set of concepts and propositions that define the component metaparadigm concepts (Fawcett 1989). The concepts and propositions of a conceptual model, however, are less abstract and general than those of a metaparadigm. For example, Table 1 compares concepts and propositions from two different conceptual models of dental hygiene developed by Darby and Walsh (1990). Both the occupational and professional conceptual models incorporate the metaparadigm concept of dental hygiene actions, but each provides a different view of them. As Kuhn (1970) explained, although scholars who support different models are looking at the same concepts, "in some area they see different things and they see them in different relations to one another" (Fawcett 1989).

Thus, individuals who adhere to a particular conceptual model constitute a community of scholars and researchers within a discipline who develop and test theory through research. Each conceptual model is a unique combination of many concepts and, therefore, presents a distinctive perspective for the phenomena of interest to a discipline (Phillips 1977; Reilly 1975).

Conceptual models are not really new to dental hygiene, as they have existed since Fones first advanced his ideas about dental hygiene (1913). However, most conceptualizations of dental hygiene were not presented in the formal manner of models. Developing of conceptual models and labelling them as such is an important advance for the discipline of dental hygiene. In regard to nursing, Reilly (1975) underscored this point by saying: "We all have a private image (concept) of nursing practice. In turn, this private image influences our interpretation of data, our decisions, and our actions. But can a discipline continue to develop when its members hold so many differing private images? The proponents of conceptual models of practice are seeking to make us aware of these private images, so that we can begin to identify commonalities in our perceptions of the nature of practice and move toward the evolution of a well-ordered concept."

Table 1. SAMPLE PROPOSITIONS FROM TWO CONCEPTUAL MODELS OF DENTAL HYGIENE

MODEL OF OCCUPATIONAL DENTAL HYGIENE	MODEL OF PROFESSIONAL DENTAL HYGIENE
Hygienist implements preventive treatment plans developed by the dentist	Hygienist implements self-generated preventive treatment regimens
Secondary care providers: Hygienist carries out isolated duties as indicated by the supervising dentist	Primary care providers: Hygienist uses the process of care to assess needs, plan and implement care, and evaluate the client
Hygienist is an auxiliary of dentistry	Hygienist is a professional who collaborates with dentistry and other health professionals
Hygienist is responsible for the less complex, easier oral health care services	Hygienist is responsible for services which include some of the more difficult techniques in dentistry to master
Hygiene care involves an oral prophylaxis every 6 mos. at a 30-45 min. appointment	Hygiene care involves multiple interventions which may require multiple appointments and appointment lengths
Hygienist is responsible for the less valued services, leaving the dentist time for the important services	Hygienist is responsible for preventive and oral maintenance care which is most valued by today's wellness-oriented consumer
Unsupervised dental hygiene practice reduced the quality of oral health care and increases the patient risks	Unsupervised dental practice increases public access to oral hygiene care and lowers health care costs
Dentistry is responsible for making decisions about dental hygienists	Dental hygiene is responsible for making decisions about dental hygienists
Dental hygienists are accountable to the dentist	Dental hygienists are accountable to the client (consumer)
Client is passive since the dentist is responsible for the client's oral health	Client is active since the client is responsible for his/her own oral health
Hygienist fulfils the specialist role through the function of a clinician	Hygienist fulfils the specialist role through the functions of clinician, educator/or health promoter, manager, change agent, consumer advice and researcher
Dental hygiene is technology-based	Dental hygiene is knowledge-based

FROM: Darby ML & Walsh MW. **Dental Hygiene Theory, Process and Practice.** Philadelphia: W.B. Saunders Co. (in preparation)

Conceptual models of dental hygiene, then, are the formal presentations of some dental hygiene scholars' private images of dental hygiene. The proponents of dental hygiene models maintain that use of a conceptual model facilitates communication among dental hygienists and provides a systematic approach to dental hygiene practice, education, and research.

Theories

Theories have been defined as statements that purport to account for some phenomenon (Stevens 1981). Theories, however, define their concepts and propositions with much greater specificity than do conceptual models (Reese & Overton 1970; Reilly 1975; Fawcett 1989). Theories generate hypotheses that are empirically testable via research (Darby 1990). The identification of a metaparadigm and conceptual models for dental hygiene would focus theory building and research efforts for the discipline.

A Human Needs Conceptual Model for Dental Hygiene

Now that I have defined a metaparadigm and conceptual models and described their use, I would like to share with you a human needs conceptual model developed in a formal manner by Darby and Walsh (1990), and to explain how this model was applied to the dental hygiene curriculum by the faculty at the University of California in San Francisco.

History suggests that the dental hygienist's primary concern has been for the whole person, who either has oral disease or may develop it, rather than the oral disease itself; and for the role of the environment and person in fostering or preventing oral disease. Dental hygiene primarily views the individual as being actively involved in

and strength to motivate behaviour (Figure 3). For example, Maslow maintains that safety needs are stronger than love needs because safety will dominate when both are thwarted. Thus, the higher the level the need in Maslow's hierarchy, the less imperative it is for survival. This hierarchical arrangement of human needs is no longer considered state-of-the-art thinking in human need theory, but Maslow's categorization and definition of various types of human needs are still considered salient today.

Nursing has also applied human need theory to its practice (Yura and Walsh 1983). Nursing's Human Need Theory includes all of the categories articulated by Maslow but chooses to arrange them differently. Specifically, it

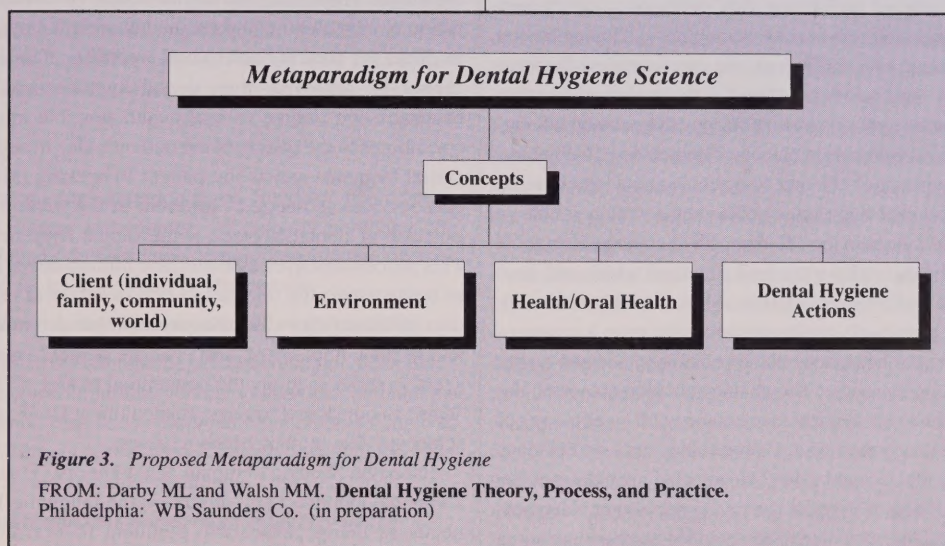


Figure 3. Proposed Metaparadigm for Dental Hygiene

FROM: Darby ML and Walsh MM. **Dental Hygiene Theory, Process, and Practice.** Philadelphia: WB Saunders Co. (in preparation)

the process of care because it is ultimately the individual who must use self-care to obtain and maintain oral wellness. It is the dental hygienist who focuses on the individual's adjustments and adaptations to the environment to promote oral health and prevent oral disease. It is the dental hygienist who focuses on the individual's lifestyle and behaviour patterns as they relate to oral health. Because of all these patient-centred concerns of dental hygiene, we select human need theory as the theoretical framework for our conceptual model.

Basic human need theory defines a human need as an internal tension that results from an alteration in some state of the system (Potter and Perry 1985). This tension expresses itself in some goal-directed behaviour that continues until the goal is satisfied. Goals and needs, therefore, provide a framework for the construction of a motivational life. Maslow's theory of human needs (Maslow 1970) arranges needs in a hierarchy of five categories based on their power

and strength to motivate behaviour (Figure 3). For example, Maslow maintains that safety needs are stronger than love needs because safety will dominate when both are thwarted. Thus, the higher the level the need in Maslow's hierarchy, the less imperative it is for survival. This hierarchical arrangement of human needs is no longer considered state-of-the-art thinking in human need theory, but Maslow's categorization and definition of various types of human needs are still considered salient today.

We applied human need theory in explaining the four major concepts of our model. The emphasis of our model requires dental hygienists to be aware of basic human needs and to make dental hygiene diagnoses based upon deficits in human need. In this model, dental hygiene interventions result in meeting basic human needs. Darby underscores the fact that "dental hygienists are unique in that they assist people in achieving their optimum oral health potentials through the dental hygiene process, the communication process, the leadership process, and the research process" (Darby 1990).

The concept of "Clients" is defined as integrated biopsychosocial beings — viewed in other words, human beings who have human needs that are biological, psychological, socio-cultural and intellectual in nature. Clients are human beings whose behaviour is motivated towards fulfilment of their human needs, and they respond holistically as integrated beings to life situations to restore their sense of wholeness as human beings.

The concept of "Environment" is defined to include such dimensions as society, climate, geography, politics, economics, education, culture, socio-ethnocultural factors, significant others, the family, the community, the state, the nation, and the world as influencing human need fulfilment.

The concept of "Health/Oral Health" is defined as a subjective state of well-being that exists on a continuum from maximal wellness to maximum illness. The higher the level of human need fulfilment, the more optimal the state of wellness. Oral health is defined as the oral condition that results from the dynamic state of client-environment interaction associated with varying levels of human need fulfilment.

In our concept of "Dental Hygiene Actions" the general purpose of dental hygiene is defined as assisting clients in meeting their human needs through the performance of those oral health behaviours and practices which will lead to optimum wellness and quality of life, throughout the life cycle. This purpose is applicable to all clients in a variety of settings. Dental hygienists use four main processes — the dental hygiene process, the communication process, the leadership process, and the research process — as means of oral health promotion and maintenance, and oral disease prevention. MacDonald (1991) developed a model for the roles and processes used by the professional dental hygienist, indicating that dental hygienists apply these processes as they function in the roles of clinician, manager, change agent, consumer advocate, educator and researcher (Darby 1990).

A Curriculum Application of the Human Needs Conceptual Model

Using the human needs conceptual model, the dental hygiene faculty at our university created a conceptual framework for our dental hygiene curriculum (Walsh et al. 1989). We formally stated in the preamble of our conceptual framework document that we viewed:

- 1) human beings as having human needs related to health/oral health which are biological, psychological, and socio-cultural in nature and which motivate behaviour.
- 2) society as being comprised of humans interacting as a complex network of individuals, families, groups and communities, and existing to facilitate meeting the human needs of its membership;
- 3) health as existing on a continuum from maximum wellness to maximum illness and associated with varying levels of human need fulfilment; and

- 4) dental hygiene care, as provided by the dental hygienist, as a system within dentistry which is comprised of the dental hygienist and the patient (i.e., individual, family or community) interacting to enhance the patient's state of oral health.

The group of dental hygiene scholars at UCSF worked diligently to modify and create courses in their dental hygiene curriculum to reflect and reinforce these concepts.

The purpose of dental hygiene was defined in the conceptual framework for the curriculum as being "to promote and maintain the patient's oral wellness by meeting human needs related to oral health in collaboration with dental and other health professionals." The preamble goes on to say that "If the state of a patient's oral health changes, the dental hygienist, within the scope of dental hygiene practice, provides the highest quality of dental hygiene care to direct the patient back to oral wellness. If oral wellness cannot be achieved, then dental hygiene care helps to maximize the degree of oral health possible and thereby contributes to the quality of the patient's life. In addition, the dental hygienist assists the patient in seeking other health care services as needed. Inherent in the fulfilment of the purpose of dental hygiene is the dental hygiene process. This process involves assessing the human needs identified as being especially relevant to oral health, and using these data to identify the dental hygiene problem (or diagnosis), and to plan, implement, and evaluate dental hygiene care." Thus, in order to apply the conceptual model of Darby and Walsh to our dental hygiene curriculum at UCSF, we had to select specific human needs to assess.

Based on Nursing's Human Need Theory (Yura & Walsh 1988), we identified and described the following 13 human needs as being particularly pertinent to oral health and behaviour in that they influence, and are influenced by, professional hygiene care:

1) Self-acceptance and acceptance by others

Description: a receptive attitude toward self and others, and by others, which recognizes the value of worth of the person without implying approval of particular human behaviours and without implying affection.

2) Adaptation to manage stress

Description: the harmonious accommodation of the person with changed demands in his or her internal and/or external environment, resulting in a balanced relationship with these environments.

3) Appreciation, attention, and respect

Description: the act of taking critical notice of and giving a determination of the quality or the value of the person; the experience of acknowledgement of achievement, worth, service or merit, to be regarded favourably, with admiration and approval by others.

4) Conceptualization, rationality, problem-solving

Description: the ability to grasp ideas and abstractions, to reason, to make sound judgements about one's life and circumstances, to resolve situational uncertainties and to answer perplexing questions requiring solutions and resolution.

5) Freedom from pain

Description: exemption from superficial (skin, mucosa), deep (muscle tendons, joints, fascia, bone), and visceral and emotional discomforts which may be interrelated and interdependent.

6) Nutrition

Description: the ingestion and assimilation of sufficient amounts of carbohydrates, proteins, fats, vitamins, minerals, trace elements, and fibre required for growth, repair, and maintenance of body function via structurally competent bodily parts.

7) Safety

Description: the experience of freedom from harm, danger or undue risk, injury, or hazards involving the integrity of the body's structure, the environment around the person and its interpretation by the person.

8) Self-control, self-determination, responsibility

Description: the exercise of personal restraint, firmness of purpose and accountability for one's behaviour and actions as a result of interaction between the person's internal powers of thought and emotions and the external forces in the physical and social environment.

9) Skin and mucous membrane integrity of the head and neck

Description: an intact and functioning covering of the person's head and neck area, including the oral mucous membranes, which defends against harmful microbes, provides sensory information, and resists injurious substances, trauma, selected rays and waves, and heat and cold.

10) Territoriality

Description: the possession of a prescribed area of space or knowledge that a person denotes as one's own, maintains control over, and defends if necessary, and that is acknowledged by others of as being owned by the person.

11) Wholesome body image

Description: the state of a positive mental representation of one's own body boundary and how it looks to others.

12) Value system

Description: an internalized designation of the importance or worth of people, institutions, things, activities, and experiences in one's life.

13) A biologically sound dentition

Description: intact teeth, restorations, and periodontium which defends against harmful microbes and provides for adequate function and esthetics.

According to our group of dental hygiene scholars, the goal of dental hygiene is the achievement of optimal oral wellness for the patient through fulfilment of these 13 human needs related to dental hygiene care. This goal is achieved through the dental hygiene process, in which the 13 needs are assessed and used as the framework for identifying the dental hygiene problem or diagnosis, and planning, implementing, and evaluating dental hygiene care for the patient. An evaluation tool to make baseline assessments of the patient's human needs related to dental hygiene care was developed by this group of scholars. Each human need was listed together with criteria that indicate whether the human need is met. The student just checked "yes" or "no" next to each criterion. If the student checked "yes" next to all the criteria for a particular need, then the human need was said to have been met and the deficit of that human need would not be factored into the dental hygiene care plan.

The foregoing has described one formal conceptual model, based on human need theory, that was developed by Darby & Walsh (Darby 1990) and applied to a curriculum by a group of dental hygiene scholars (Walsh et al. 1990). Dental hygiene theorists are encouraged to develop additional conceptual models based on a dental hygiene metaparadigm. Various conceptual models would look at the same concept of dental hygiene care but would "see" different things. When attempting to develop conceptual models of dental hygiene, the theorist should attempt to define and refine the concepts in a metaparadigm. Each conceptual model of dental hygiene, as it evolves, develops the main concepts of the metaparadigm by bringing in other, and in many cases different, concepts. Each model emphasizes different phenomena and leads to different questions about dental hygiene. Acceptance of a metaparadigm is an important step in the evolution of research and theory development in dental hygiene.

Conceptual models, such as those I have just described, would provide direction for research. For example, utilizing a dental hygiene conceptual model based on human need theory might suggest the hypothesis that providing children with some kind of toy for comfort and allowing parents to remain in the operatory during the delivery of pediatric dental hygiene care would produce more effective care than would occur in the absence of these supportive conditions, because doing so better meets the patient's human need for safety. Testing such a hypothesis would be an appropriate area for dental hygiene research.

This is only one of many research opportunities that surfaces when theory is developed based on a conceptual model.

In conclusion, I have attempted to define the terms "metaparadigm", "conceptual model" and "theory", and to discuss their relationship to the structured hierarchy of knowledge in a discipline. I have provided for your consideration examples of a metaparadigm for the discipline of dental hygiene and of dental hygiene conceptual models. Finally, I have emphasized the importance of metaparadigms and conceptual models to the emergence of theory development and an orderly body of knowledge for the discipline of dental hygiene, and consequently to dental hygiene's

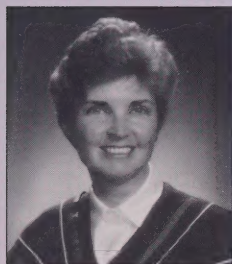
evolution as an emerging profession. I hope my presentation has served to stimulate interest and to promote cooperation between dental hygiene educators, researchers, and practitioners in establishing such an organizational framework for dental hygiene. I believe that doing so will promote enhanced dental hygiene research, teaching and patient care. This in turn will foster dental hygiene's continuing evolution toward professionalization. Plato's statement that "nothing ever is but is always becoming" seems most applicable here. I submit to you that we must influence what we are becoming, and plan a preferred future for the discipline of dental hygiene.

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Theory Development in Dental Hygiene

Patricia M. Johnson, RDH, MSc, PhD



Patricia M. Johnson

Dr Walsh has presented a very stimulating paper - a milestone in the continuing professionalization of dental hygiene. She challenges us to participate in establishing a theoretical framework with which to build and organize the body of dental hygiene knowledge. Those theoretical tools,

she suggests, will foster the evolution of dental hygiene as a discipline. In this context, she has presented a metaparadigm and conceptual model she developed in conjunction with Michelle Darby and made reference to their application in the curriculum model developed at the University of California in San Francisco.

As a reactor, my comments will focus in particular on the relevance of the proposed framework to dental hygiene practice. Of dental hygiene's four dimensions or fields of activity—namely, practice, education, research and administration—practice is central to, and the objective of, the remaining dimensions.

Background

Interest in the theoretical basis for dental hygiene practice, although relatively new, has been evolving steadily. The contribution of Walsh and Darby is consistent with activities in recent years to more clearly define the discipline of dental hygiene. The new approach emphasizes the knowledge, decision-making methods and communication techniques required by dental hygienists in a time of rapid technological advancement, changing service requirements and delivery patterns. In addition there is increasing concern over service quality and accessibility, and with technical efficiency and cost containment.

There has been, for example, the articulation in the United States of six practice roles that are based on the premise that dental hygiene practice of the future will be more knowledge-based, process-oriented, and varied in the settings in which it occurs. The use of theoretical concepts as guides for action or practice, and the nature of those concepts, were explored with Dickoff and James at the 1987 Iowa Dental Hygiene Research Conference. Redefinition of dental hygiene in terms of health goals or outcomes, strategies, and specific behaviours or interventions (as

opposed to the traditional list of tasks or "duties"), increasingly is reflected in legislated scopes of practice—for example, as proposed for Ontario. Papers presented at this Symposium suggest that dental hygiene curriculum increasingly will be based on the client-centred dental hygiene process (that is; assessment, planning, implementation, and evaluation) as the method for carrying out the functions and behaviours of practice. Standards or guidelines for dental hygiene practice that reinforce use of the dental hygiene process have been developed for Canada and the United States.

Missing in this evolution, to date, has been a well-articulated philosophy of dental hygiene and theory-based conceptual models for practice. Until recently, dental hygiene was controlled largely by forces outside the profession—a situation that persists depending on the issue, the players and the jurisdiction. Efforts to develop systematic

dental hygiene knowledge are rudimentary. Dental hygienists make and record observations largely to serve the needs of other professionals who use the information to develop knowledge about their own practice. Dental hygienists could use those observations and recordings to systematically formulate insight and understanding of dental hygiene practice,

and develop theories to contribute to dental hygiene science. Dental hygienists have gained intuitive knowledge about what is needed to improve people's health and have applied it to the care of individuals. With the steady rise in dental hygiene practice and education research, we are working to structure, test and develop this intuitive knowledge in order to make it available to other practitioners.

As Chinn and Jacobs (1983:4) note, in their book *Theory and Nursing: A Systematic Approach*: "Theory development that is rigorously accomplished will help avoid a haphazard approach to practice based on the expediency of the moment." Moreover, systematically developed theory will produce a well-founded basis for the continued description, explanation, prediction, and control of practice."

That is, we cannot understand or explain the reality of a person's behaviour or condition by merely observing and doing; we require a mental process—a conceptual model or a preferred way of looking at dental hygiene. This process or model should assist us to organize reality into descriptions,

"Theory development that is rigorously accomplished will help avoid a haphazard approach to practice based on the expediency of the moment."

explanations about what we experience, predictions of likely effects, and the conditions necessary to control the situation—that is, to achieve desired oral health outcomes.

Theoretical Approach

Accepting the need to adopt a more theoretical approach, let us examine the theory basis in Darby and Walsh's work. The metaparadigm and conceptual model they have proposed are founded on nursing theory. In fact, the four concepts—person, health, environment and discipline—are common to most, if not all, nursing models.

Drawing on nursing theory is appropriate. Nursing theory, and in fact most practice-related theory, is derived in part from more basic behavioural and biological disciplines. Dental hygiene and nursing as care-giving disciplines have many similarities. However, there are also basic differences.

In building on the work of Walsh and Darby, care should be taken to develop and maintain a dental hygiene perspective. Borrowed concepts should be redefined and synthesized within the context of the uniqueness of dental hygiene knowledge and the realities of dental hygiene practice. Alternative theoretical approaches should be examined for their applicability to various dental hygiene practitioners and practice settings. Dental hygiene models should clearly distinguish that discipline from the purposes and processes of nursing.

Choice of Nursing Human Needs Theory

Walsh and Darby's model is based on the nursing human needs theory, thereby raising the question of "why this choice?" A review of the nursing literature indicates that many conceptual models exist. Choice of the best model (and hence its underlying assumptions), remains controversial among nurses.

As an example, most models define nursing as a helping discipline, with the primary focus on the interpersonal interactions occurring between nurse and client. However, some authors view the interpersonal process as being dependent on the traits and goals of the client, with the nurse's role primarily one of facilitator (the self-care approach), whereas others view the process as being either shared or initiated by the nurse. This latter view leads to theoretical propositions that focus primarily on nursing actions, more so than the will and behaviour of the client. Both views may be consistent with reality as found in differing situations.

There is a move in nursing towards "theoretical pluralism". For example, the Canadian Nurses Association (1980:vi), in the preamble to its standards for nursing practice, notes:

"There exist several conceptual models for nursing and the selection of a particular model is a matter of informed choice. It is therefore necessary that nurses determine,

according to the model chosen, what will be their specific definition of nursing practice in their setting. This definition should reflect the assumptions, values and major units of the conceptual model."

In short, dental hygiene should avoid focusing on one theoretical approach exclusively.

The Theory Development Process

Turning now to the process by which theory is developed, we find it involves several groups of participants and activities. Participants should include dental hygiene practitioners as well as theorists, researchers, and educators; all are interdependent in the process of theory development and testing. While practitioner involvement may be less automatic and require more specific planning to achieve, the effort will pay off in increased support for the process and usefulness of the results. As Chinn and Jacob (1983:21) note, "practitioners will both rely on and support theory that leads to more effective approaches in practice and will contribute needed clinical observations to the development of theory".

Chinn and Jacobs (1983:21) describe four autonomous, yet interrelated activities in theory development, namely; 1) concept analysis—that is, identifying the reality base of dental hygiene practice, 2) construction of theoretical relationships between the identified concepts, 3) testing of those relationships, and 4) practical validation of the theory.

If, as Walsh suggests, development of theory-based models will foster the evolution of dental hygiene as a discipline, then the most important and perhaps most difficult step—

and the one that I believe requires further attention from the profession as a whole—is the one that should precede the actual adoption of a metaparadigm and development of models. That step involves the establishment of a basic philosophy of dental hygiene practice—values, beliefs and goals that are shared by all players involved in the theory-building and testing process.

Chinn and Jacobs (1983:10) suggest that theory based on shared values and goals will; 1) enhance professional autonomy by developing specialized knowledge and understanding, 2) clarify and enhance coherence of purpose within a profession, and 3) foster professional communication among theorists, researchers and practitioners.

Moreover, that statement of philosophy—the fundamental principles and assumptions inherent in the paradigms and models should be stated "up front", in order to guide researchers in their subsequent model refinement and testing and to guide practitioners in their choice of a model. For the way a practitioner intervenes with a client is determined by the type of model chosen as the basis of practice; that choice requires knowledge and understanding

"practitioners will both rely on and support theory that leads to more effective approaches in practice and will contribute needed clinical observations to the development of theory".

of the underlying philosophy and assumptions of the models available.

Specific to Walsh and Darby's work, their philosophical approach becomes apparent through the description of the model's concepts. However, a concise statement presented as a preamble would assist practitioners to make an informed choice.

Concepts

Time does not permit an extensive discussion of the major concepts or ideas in the model presented today. I will observe that uses of the concept "society" rather than "environment" may be overly limiting for curriculum development intended to produce practitioners for tomorrow. As in the Walsh and Darby model, the trend in health planning is to define the environment broadly, in recognition of the variety of contextual factors that influence the health of individuals and the relationship between, for example, the dental hygienist and the client.

A definition of the environment used by the College of Nurses of Ontario (1990) may prove useful as dental hygienists seek to analyze the realities of their practice. In this definition, the environment is depicted as having two aspects. Immediate aspects included, for example, the physical surroundings where services are provided and the physiological, psychological, and social status of the people involved. Less immediate aspects include society, the health-care system, the employment setting and its administration, and the discipline's education, research and regulation.

Dental Hygiene Process

My final comment involves the dental hygiene process of care or service. Derived from the basic problem-solving process and similar to the nursing process, the dental hygiene process organizes practice around assessment, planning, implementation and evaluation activities. The process is a vehicle for developing enquiry skills and dental hygiene knowledge. Walsh and Darby have included the dental hygiene process as a component of their model.

The nursing process has provided an important framework for nursing. Implicit or explicit in most nursing models and statements of philosophy, it views nursing as a deliberate, thoughtful, and self-correcting process rather than as a rule-oriented set of skills. Torres and Stanton (1982:42) suggest it provides practicing nurses with both a new sense of purpose and direction consistent with nursing's basic values as a caring profession, and a sense of increased effectiveness achieved through use of a systemized form of nursing practice.

As I indicated earlier, dental hygiene has already introduced the dental hygiene process into recent curriculum changes and used the process as the basis for developing standards for clinical practice. Among current practitioners, its application as a method for practice will evolve more

quickly as information on theory-based practice models is disseminated more widely and as regulatory requirements for quality assurance and continued competence are extended.

Thus, to paraphrase the Canadian Nursing Association (1980:iii), dental hygiene practice should be based on a conceptual framework, the method for that practice should be the dental hygiene process, and practice standards should reflect the belief that both the basis and the method of practice are in place.

Conclusion

It is time for dental hygiene to engage more purposefully in theory development—to articulate the values and assumptions that have shaped dental hygiene education, research, and practice, to evaluate their appropriateness for the future, and to initiate the development and testing of models of dental hygiene practice that are consistent with the profession's values and public- and self-interest goals.

Dr. Walsh has presented a major contribution to this process. Her paper is certain to evoke comment, encourage developmental activity and impact strongly on the professionalization of dental hygiene.

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IMAGINE

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Irene R. Woodall, RDH, PhD



Irene R. Woodall

It is exciting for me to hear dental hygiene described with a new paradigm that brings together in one conceptual framework what we have been discussing in fragments for the past several years. My compliments to Dr. Walsh and her colleagues for developing the paradigm, and for juxtaposing it to how we have been seeing or practicing dental hygiene for decades. It is time that we turn off the tape recording we have in our heads about what dental hygiene was and is, and look for a new symphony of ideas that make us better prepared for the future and more valuable to the public. The most important challenge now, regardless of the form of the paradigm, is to close the gap between the kind of development we have heard described and what the typical dental hygienist cares about.

While we talk about metaparadigms and concepts versus theories, dental hygiene clinicians are still struggling with the best way to eke out enough appointment time to take blood pressure readings and conduct thorough head and neck examinations. We need to take our visions of dental hygiene and translate them into concrete explanations of how dental hygiene clinicians will spend their day and how they will earn a living. Many are concerned about the lack of control they have over their own style and priorities of practice. Thus, it is understandably difficult for them to even comprehend establishing a new metaparadigm. Why would they have the control to rewrite the nature of the profession if they haven't enough control to ensure that every patient receives even baseline quality care under the old paradigm?

They are concerned about job opportunities and professional growth. They recognize that salaries are far more a function of supply and demand for dental hygienists than of their inherent importance in oral care or in the operation of a dental practice. They remember how job security was an oxymoron for dental hygiene in the early 1980's, and that it took a perceived dearth of dental hygienists willing to work in private practice for salaries to become reasonable again. They feel at the mercy of employer-dentists for their financial security and growth, and for opportunities for professional growth. It requires an enormous leap on the part of our continent's dental hygienists to see how productive it might be to try to rewrite, or even rethink, the profession. Still, this is our most important goal. Clinicians and our compatriots

in public health, management, industry, and everywhere else we find dental hygienists, need to recognize the importance of establishing and realizing a new metaparadigm—a new way of understanding ourselves and our position in the community of health care providers.

Dental hygienists need to see that the path we define in highly academic terms is probably the key to resolving and not just patching the shortcomings we find in dental hygiene as it is currently defined and practiced. We ultimately need their support in order to make this fledgling dream a reality. As Dr. Walsh pointed out, the substance of our research effort must originate, in large part, in clinical practice. The findings then must be translated back into practice. This will not happen if there is a chasm between the scholars and the people who practice dental hygiene everyday.

The gap starts with the expectations of the applicant pool and what academics intend to teach. Progressive programs take months to teach new students to expect more than the role of cleaning teeth and teaching patients proper oral hygiene. Then we turn them loose in a world where there are still few opportunities for hygienists to apply what they have learned. Particularly today, in the United States, where dentists are afraid that dental hygienists will be seen as sufficiently competent to practice unsupervised, the emphasis is upon how undertrained and unqualified hygienists are to perform procedures we've learned and practiced for years. Graduates may be finding themselves entering an even more restricted scope of practice than they would have found 10 or 15 years ago.

It is very easy to assume, or believe, that dental hygienists in practice do what they learned in formal programs. If a dental hygiene program matches the style of practice that has typified dental hygiene since the 1950's, there is no dissonance between the two. But if a program asks the students to individualize care, spend as much or more time on assessment as on scaling and polishing, and moves the clinician out of an endless stream of prophylaxes and root planings into a whole new world of oral disease identification and management, the dissonance can be considerable.

If our task is to define one or more metaparadigms of dental hygiene and build this bridge, the metaparadigms must come from a consensus of dental hygienists. Certainly leaders need to step forward to lay out a framework, such as is happening today. But the grassroots dental hygienists need to think about it, debate, modify it, and test it. They may then embrace it and believe it. How can we do this?

Some work or driving forces have already occurred:

- Workshops saying we need to address research have occurred periodically over the past 8-10 years, with a clearer image forming as a result of each.
- Heated discussion regarding the need for a minimum 4-year degree for entry into dental hygiene has centred around many of the issues of a metaparadigm even though it may not have been labelled that way.
- Movement toward a College of Dental Hygiene in Ontario and greater representation of dental hygienists on state boards of dentistry show movement in support of the foundations of a new metaparadigm.
- Individual dental hygienists have tested the laws that require supervised practice. This overall trend led to war with dentistry, further opening our eyes to the issue of control and dwindling security. It also showed us options for how we deliver care, and that some battles can be won.
- We have lived through an era of a shakey applicant pool where standards were sometimes compromised, and where classes started in the Autumn with empty seats. Programs, including some of our finest ones, closed their doors.
- Preceptorship has frightened even some of the most complacent hygienists. We had to face the fact that some dentists (numbers sufficient to initiate legislation) really believe we can be easily replaced by an on-the-job trained tooth cleaner.

These, and other forces, create enough energy that our profession is seeing a need to look for something new. It is important that we find an answer within the profession, and create a new metaparadigm that resolves the most grievous of our problems, and that makes us more likely to be of use to the public in preventing and resolving oral hygiene problems. Clinicians are looking for an answer. We need to involve them in that decision making, so we do not create an Edsel (a new look but no one buys it).

A step that can be particularly unifying and that helps focus dental hygienists is an exercise I first learned at the research workshops at the University of Iowa in 1988. James Dickoff and Patricia James were two main speakers at this meeting. They suggested that we need to define who we are today and who we want to be. Based on that session, I like to ask hygienists to respond to a series of attributes to see which ones describe us. They argue and debate and agree on which ones are accurate descriptors and which ones create ambivalence for them. They see several traits (e.g., intolerant, structured), as two-edged swords. They add traits until they reach a consensus on a description of a dental hygienist. We decide which ones need bolstering. We follow the same process over what we do and where we do

it — our functional role. Next, we focus on what we could do. This is where we begin to claim technology that is emerging, adding to our scope of practice based upon the fundamental attributes and skills we already have. Similar exercises can involve all of us in redefining that metaparadigm and making it believable and relevant.

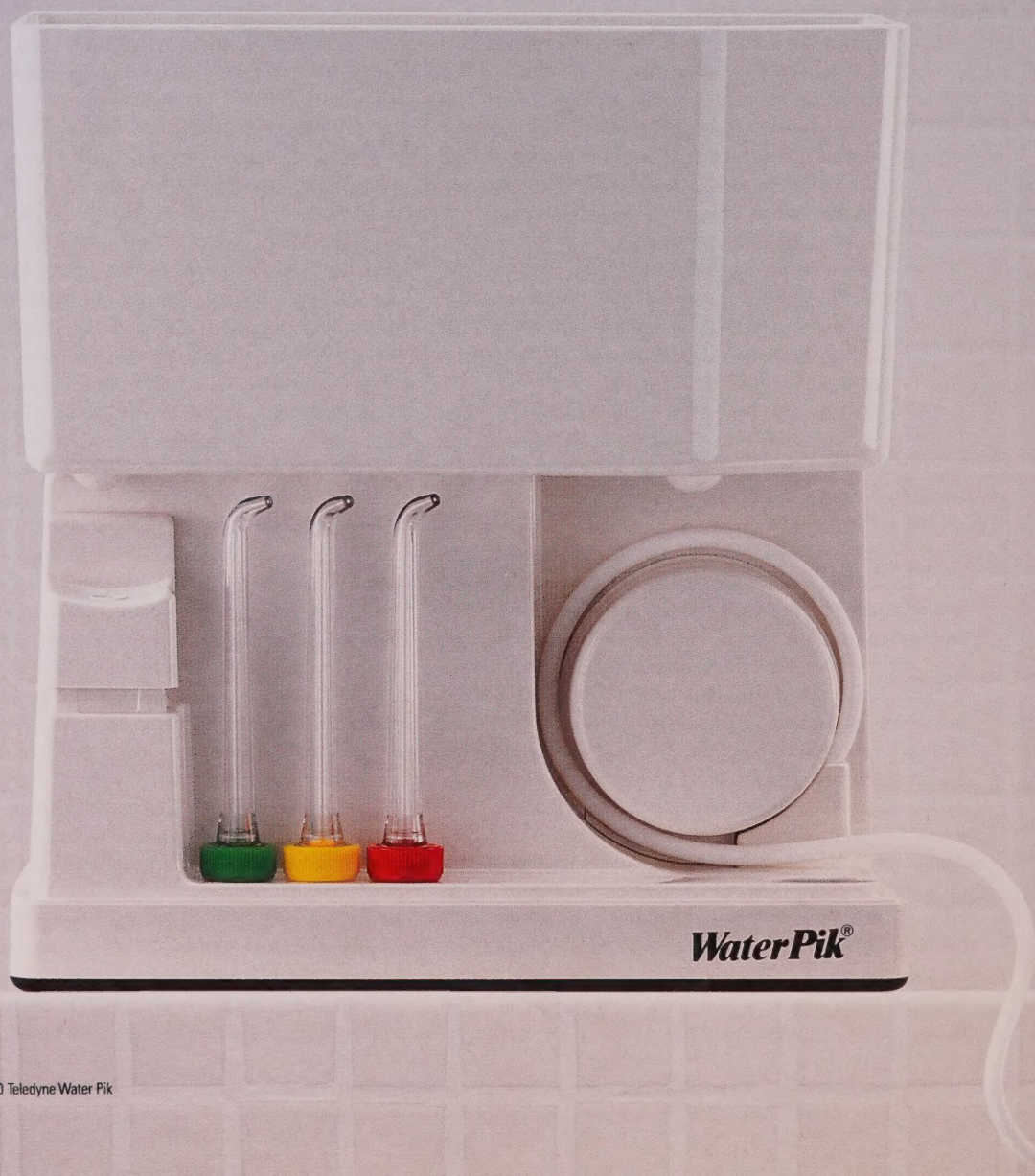
Another key step in bringing the metaparadigm to the profession involves a keen understanding of communications — interpersonal, small group, and mass media. We already have much of this at our fingertips. We need to formalize the skills we have and add what is missing. If we are going to undergo a major metamorphosis, we had better be able to communicate it effectively in everything we do. We need to communicate among ourselves and to our patients. We need to communicate with dentists, legislators, insurance companies, industry, and the mass of potential consumers of our services. It will do no good if a few of us have a clear understanding, and others carry a multitude of interpretations that may have a negative effect on the overall movement.

We need to establish alliances—specifically with other allied health-care groups and with consumer advocacy groups. We can learn from the community of health care workers, many of whom have already made it through similar transitions. And if we are going to change the rules about who we are and what we do, the consumers need to hear and respond to those plans, telling us their perspective. Then they can support us. And we will need lots of support.

Once we have a notion of what we are from a functional point of view, we need to begin validating those procedures and approaches. Is there research to support what we do? What else is needed in order to develop a body of knowledge that supports what we do clinically? A small example of an area that was a mainstay of clinical practice that we subjected to research is complete dental polishing after scaling. The research showed that it has no positive impact on oral health. In research-based practice, as a result of these findings, dental hygienists should certainly be limiting the amount of polishing they do and characterizing it for their patients as a cosmetic procedure of limited value. They should be using the precious, saved time to provide services that have therapeutic or preventive merit. What else do we do in clinical practice that has never been tested for its importance?

When we arrive at this point as a profession, we are ready to tackle the next level of professionalism. We are ready for the research-based approach to clinical practice. We are ready for what Denise Bowen described, including a long-range plan for research and collaboration with the NIDR and industry to achieve that goal. We will become “neck up” rather than “neck down” hygienists, terms recently coined by Michelle Darby which capture the fundamental approach to a questioning, research approach to decision making.

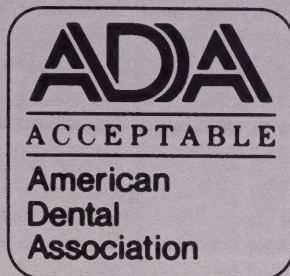
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1. Flemmig T, Newman M, Doherty F et al. Supragingival Irrigation with 0.06% Chlorhexidine
in Naturally Occurring Gingivitis. *J Periodontol* 61:February 1990.

Ironically, the direction of research findings surrounding scaling and root planing may be the single greatest impetus for us to examine how we spend our time. A review of recent results suggests that scaling and root planing may be replaced with less invasive and more effective procedures that may require less technical skill but more judgement. Research is beginning to show that root planing to remove all cementum may be overkill. We may be limiting subgingival instrumentation to disturbing the microflora, and to an ultrasonic or hand scaling that removes calculus and thoroughly but gently traces the available root surface. Even this procedure may become unnecessary as research shows us our folly and the new possibilities for treating the disease. No one knows how this area of development will be resolved, but the fact remains that the mainstay of the old paradigm may be non-existent in five to ten years. This should wake even the sleepiest of us from a trance of endless prophylaxes.

Dr. Walsh mentioned that inherent to rewriting the metaparadigm is the need to expand the definition of the

health of the client to a basic 35 needs. Then we can focus our attention on helping people meet those needs, particularly as they apply to their oral health. I find it unsettling that we have not met our own needs yet. We lack, for instance, an acceptance of self and others, self-determination, and territoriality. How can we help others in meeting these needs when we are unable to recognize such needs in ourselves and then act to resolve them? We need introspection and action.

Perhaps, above all, we need continuing leadership to lay out the most likely and the most progressive metaparadigms, and then create opportunities for dental hygienists to understand the issues, help shape the responses, and feel ownership for the changes that are necessary to redefine dental hygiene. We need change; what we can hope is that the conceptual will become reality, and that it will be our collective concept.

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Denise M. Bowen, RDH, MS



Denise M. Bowen

I would like to begin by commending Dr. Walsh and her colleagues for their "pioneering" work towards development of a conceptual model for dental hygiene. As a result, the emerging discipline of dental hygiene now has a framework from which it can begin to define a body of knowledge that is

organized upon a given metaparadigm and a theoretical base. Of course, this particular model should represent only the beginning of our efforts to build dental hygiene theory. Other conceptual models need to be developed by dental hygiene scholars; and each model will require testing of the interrelationships of its concepts, in order to build theory and to define the body of knowledge of the discipline.

If we look at other disciplines, we can see that various conceptual models have been developed representing diverse views of various scholars. In psychology, for example, two well-known theorists, among others, have proposed distinctly different models for describing human behaviour. Skinner proposed the theory of behavioural modification in which behaviour was shaped through positive and negative reinforcement. Maslow described the hierarchy of needs model in which behaviour was dictated by the basic human needs, that is, the higher the need the more influence it had on an individual's actions. Several researchers, over the years, have tested various components of these conceptual models and, as a result, new theories have been developed.

Dr. Walsh has presented one conceptual model which can be tested, refined, validated or redefined by dental hygiene scientists in the future. She has stated that a metaparadigm is a global view of a discipline, and that dental hygiene needs to critically analyze all aspects of its practice to define our own metaparadigm. Based upon my own view of the discipline, I would venture to describe the dental hygiene focus as the promotion of oral wellness. My comments are based upon that image of dental hygiene.

First, I will discuss the models of occupational dental hygiene and professional dental hygiene as outlined by Darby and Walsh. Both of these models describe dental hygiene care as preventive oral health care; however, they are distinctly different in terms of the process of delivering that care. In the occupational model, care is technically-based with the dentist serving as the supervisor and the decision-maker. In the professional model, care is knowl-

edge-based and the dental hygienist functions as primary care provider and collaborator. Dental hygiene researchers could use the four concepts proposed by Darby and Walsh, those being the client, the environment, health/oral health, and dental hygiene actions, to examine various components of these two models. For example, how is the client's health/oral health affected by the environment in which oral hygiene services are delivered to the client? In other words, how is the quality of dental hygiene care and oral health outcomes affected by technically-based versus knowledge-based dental hygiene care? Also, how are the client and the client's compliance influenced by these two types of dental hygiene actions? A myriad of research questions such as these could be proposed to examine the various concepts defined in this model.

Conceptual models, in general, are developed by drawing from models and theories in other disciplines and specifically applying them to another metaparadigm. Darby and Walsh have based the conceptual model presented here on models of nursing care, which are based upon human needs theory from the social sciences. The four concepts of client, environment, health/oral health, and dental hygiene actions have been adapted from nursing to define dental hygiene care. While there are certainly similarities between nursing and dental hygiene, differences also exist. Nursing care is often more critical in nature and, in my opinion, often meets more basic human needs than dental hygiene care. Let's examine the proposed definition of the "client" in this model. The "client" is defined as an "integrated biopsychosocial being" with various "biological, psychological, socio-cultural and intellectual" needs. Further, it is stated that the client is "motivated towards fulfilment of human needs" and "responds holistically as a total integrated being to life situations". This definition of "client" might be more easily adapted to nursing care than to dental hygiene care. Dr. Walsh further states, in her discussion of health/oral health, that "the higher the level of human need fulfilment, the more optimal the state of wellness".

While I agree with these propositions, I must argue that preventive oral health care might not serve to meet the highest level of human needs, whereas nursing care could. Of course, healthy teeth and periodontium might contribute to improved self-esteem, nutritional status, appearance and social acceptance; however, they are not essential to life itself. And, it is common knowledge that oral health care is not on the list of highest priorities of many human beings,

particularly those who do not have basic human needs met (e.g. the poor or the infirm).

I am certainly not suggesting that this difference between nursing and dental hygiene makes this model inappropriate for study. However, in my mind, the underlying assumption that dental hygiene is based upon fulfilment of human needs presents a challenge for us to test this theoretical model in current dental hygiene practice.

In this context, we can consider the thirteen human needs defined by Walsh and her colleagues at the University of California in San Francisco. These scholars have suggested that dental hygiene practitioners assess these thirteen attributes and use that information as the framework for dental hygiene diagnosis and for planning, implementing and evaluating dental hygiene care. In current dental hygiene practice, a thorough medical, dental and periodontal assessment is suggested as the accepted standard of care. Little, if any, attention is given to assessment of patient attitudes, lifestyles, territoriality and value systems. One could logically hypothesize that assessment of these additional attributes would increase our understanding of the client, thereby improving dental hygiene actions that would foster optimal oral health.

Assessment mechanisms would need to be developed and tested for validity and reliability, and then various

modalities for addressing identified needs also would need to be examined. When one considers the fact that dental hygienists have difficulty in practice justifying the currently recommended assessment procedures to clients and to employers, one might question the practicality of expanding dental hygiene assessment as proposed. Much data will need to be generated to document the importance of these thirteen human needs as they relate to the provision of quality dental hygiene care.

Certainly, future study of the conceptual model presented by Dr. Walsh, at this symposium, could serve as the basis for moving from the occupational, technically-based practice of dental hygiene to the professional, knowledge-based practice of dental hygiene. As additional conceptual models are developed, dental hygiene researchers will begin to provide the knowledge-base necessary for the advancement of the art of dental hygiene practice. Possibly a more holistic approach to our care, as proposed in this model, would enhance not only the quality of care provided to clients, but also contribute to the consumers' perception of the value of preventive oral health care services — increasing their awareness of the importance of oral health as related to total body health.

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Abstracts

Poster Session

1) AN EXTRAMURAL PROGRAM IN NORTHERN NEWFOUNDLAND

*M.G.E. Forgay, Dip DH, BA, BEd, MA & J. Clovis,
Dip DH, BEd, MSc
School of Dental Hygiene, Dalhousie University
J.G. Messer, Grenfell Reg. Health Services, Halifax, NS*

Extramural programs can provide a range of student experiences that reflect the oral health needs of client groups other than those who are volunteer attenders at school clinics. Remote areas can offer unique learning experiences for dental and dental hygiene students with a potential outcome of attracting graduates to provide ongoing oral health care. Since 1989, the School of Dental Hygiene and the Faculty of Dentistry at Dalhousie University and the Grenfell Regional Health Services Region of Newfoundland and Labrador have co-operated to provide student externships at a dental clinic in St. Anthony, Newfoundland. The purposes of the program are to provide senior dental and dental hygiene students with experience in delivering care in a remote community and to enhance the dental care provided for the population served by Grenfell Regional Health Services. Pairs of selected senior dental and dental hygiene students have two-week rotations in St. Anthony. Faculty appointments are given to on-site dentists who supervise and test students in that clinic. To date, the program has been assessed through the review of oral and written reports of students and supervisors. Since a primary objective is to influence the attitudes of students concerning working in a remote area, a survey instrument will be developed to measure attitudinal change pre- and post-rotation. Opportunities for clinical and epidemiological research will also be explored.

2) USA: CANADA'S LARGEST DENTAL HYGIENE PROGRAM

M.E. Kinnear, Dip DH & M.G.E. Forgay Dip DH, BA, BEd, MA, Dalhousie University, Halifax, NS

In recent years, American dental schools have admitted increasing numbers of Canadian applicants, a trend which has been well documented. Until now, no such documentation has existed for dental hygiene programs. Anecdotal information from several programs had indicated that some Canadians wishing to become dental hygienists were enrolling in programs in the United States. This phenomenon is attributed at least in part to the applicant position ratios in Canadian programs which are as high as 60:1.

In the summer of 1989, a survey of all accredited U.S. dental hygiene programs undertook to determine the extent and distribution of Canadians applying to and enrolling in U.S. dental hygiene programs. Individual Canadian students within each program were surveyed to determine demographic characteristics, reasons for attending in the United States, and plans for employment after graduation.

The response rate from programs was excellent: 80.1% (157) of 196 programs. Results indicate a dramatic increase in both applications and admissions over the past four years. Applications increased from 40 to 216, and admissions from 9 to 72 from 1986-1989. The

majority of these are Ontario residents who intend to return to Ontario to practice.

At present, the numbers of Canadians graduating from U.S. programs and intending to return to Canada to practice is approximately double the number of graduating students in Canada's largest program. Nearly 20% of all new Canadian practitioners are educated in the U.S., at the same time that some dental hygiene programs in Ontario are being suspended. The influence of U.S. dental hygiene programs can no longer be ignored in dental hygiene human resources and education planning.

3) THE NECESSITY FOR MOISTURE CONTROL IN PIT AND FISSURE SEALANT APPLICATION

*K. Jackson, Dip DH, J. Maru, Dip DH & R. Mayes, Dip DH
University of Alberta, Edmonton, AB*

The most common cause for failure of a pit and fissure sealant is contamination of the etched enamel surface prior to sealant application. The unintentional water contamination of the etched surface is a common occurrence and it is important that the operator knows how to deal with this problem before a sealant is applied and results in failure. Although saliva contamination has been extensively studied, no study has examined the loss of retention due to water contamination. The purpose of this pilot study was to determine the effects of water contamination on pit and fissure sealants.

The labial surfaces of eight molars were used for this study. These surfaces were etched and tested for sealant retention with water. The tri-syringe or laser was used for drying. Half were treated with a chemically cured sealant and half with light cured. The sealants were then removed and visually examined under SEM to determine sealant retention on the etched enamel surface. Results illustrated that virtually no bonding had occurred with the water contaminated specimens. It is speculated that water may act as a barrier against sealant adhesion and therefore a protocol for moisture contamination should be considered. Further research is required to quantify the loss of sealant retention due to water contamination.

4) SELECTIVE POLISHING: THE INDIVIDUALIZED APPROACH

*K. Ermantrout, Dip DH, M. Leuwer, Dip DH & D. Vallee, Dip DH,
University of Alberta, Edmonton, AB*

Traditionally, routing scaling and root planing procedures have been followed with a rubber cup prophylaxis to remove plaque and stain. A review of the literature on selective polishing indicates that in order to preserve the fluoride-rich surface, polishing is contraindicated on enamel that is compromised because of demineralization, recent eruption, hypoplasia, rampant caries and xerostomia. Coarse abrasives remove considerable tooth structure and leave a rough surface which is more susceptible to stain and plaque formation. A mail survey was circulated to 100 of the 500 offices in the Edmonton area to determine polishing protocols and

to assess practitioner knowledge of the selective polishing concept. Fifty-three offices responded to the survey. Results showed that 66% of the patients in these offices receive a rubber cup prophylaxis twice a year, and 70% of the offices used products which are known to be amongst the most abrasive polishing agents available. Only 14 out of 53 offices employed selective polishing. This paper proposes standard criteria and contraindications for the rubber cup prophylaxis so that it may be a more individualized and meaningful procedure in treatment planning.

5) USING EDUCATIONAL RESEARCH TO ENHANCE CLINICAL EVALUATION AND TEACHING

B.A. Zier, Dip DH, BEd, MEd & J.F.L. Pimlott, Dip DH, BScD, MSc, University of Alberta, Edmonton, AB

The goals of promoting enhanced clinical dental hygiene teaching and evaluation and opportunities for clinical dental hygiene research do not have to be independent, but can be looked at for the ways which they can maximize each other. In these times of dwindling resources and increased demand on faculty, it is important to explore mechanisms to accomplish several objectives through one effort. The purpose of this poster is to illustrate how a faculty calibration study can be used to enhance teaching, evaluation and faculty's involvement in educational research.

A calibration framework was designed to include four components; baseline assessment, planning, action and evaluation. The baseline assessment focused on the collection of both subjective and objective data. Subjective findings were obtained from student and staff feedback, both of which highlighted a high level of concern with faculty calibration. The planning aspect focused on the priorities, goals, objectives and selection of the implementation strategies. In the action phase the specific calibration activities to achieve the goals and objectives were identified. The implementation strategies included group workshops, clinical sessions, peer collaboration and pair matching activities. During the evaluation the results of the program are measured against the defined goals and objectives. The presentation will include the development of the framework, the baseline assessment and resulting action activities undertaken.

Faculty calibration is an important ongoing educational research area which facilitates not only improvement of the teaching process but also a greater commitment by the faculty to enhance teaching through research and thereby accomplishing several goals.

6) THE DILEMMA OF FOSTERING COMMUNICATION SKILLS IN CLINICAL TEACHING

J.F.L. Pimlott, DipDb, BScD, MSc & B.A. Zier, Dip DH, DEd, MEd, University of Alberta, Edmonton, AB

A gap often exists between communication theory and effective implementation by students in the clinical setting. To assess the implementation of an integrated communication program our faculty set out to study one class of students in several phases during their two-year program.

In phase one, while receiving the communication theory, they participated in an integration which comprised logging communication interactions as one learning activity in the pre-clinic instrumentation laboratory. The logbook was designed to foster a supportive and interactive learning environment, and provided a means for both students and instructors to observe and facilitate changes in development in communication skills.

During the second phase, the students participated in the development of a dialogue protocol for teaching patient education. The protocol was designed to be a tool to separate the patient education process into a series of steps. This teaching tool integrated clinical assessment and patient skill development with the use of collaborative problem-solving strategies. In the last phase, as senior students, they used a second logbook focused primarily to facilitate student self-assessment of their interpersonal communication strategies.

The results of our multiphased program showed that, although we facilitated students' enhanced appreciation of the importance of communication, we did not achieve our complete expectations. We remain committed to further development of an integrated model that will more fully integrate communication theory throughout the dental hygiene program of study.

Paper Presentations

1) REDUCING RATER BIAS

*D. Ross Abrams, RDH, MS
Indiana University School of Dentistry, Indianapolis, IN*

Research indicates that evaluators in education or business, using open or detailed evaluation formats, render appraisals that are subjective and influenced by rater bias. However, team evaluations have been found to be more reliable, credible, defensible and often less biased.

This is a design for a cyclical process for a team faculty calibration that can be adapted to a specific area, i.e. dental hygiene clinical evaluations.

The objectives are to reduce the impact of individual rater bias within the team and to increase interrater reliability to promote consistent quality of evaluation and program continuity.

These will be accomplished by team building, using the Myers Briggs Type Indicator (MBTI), Form TM; criteria sharing, using

existing written clinical guidelines; simulation, using video-tapes of clinical procedures; clinical applications, using actual clinical situations with students and patients; and feedback, using information from faculty, students and patients.

2) LEARNING STYLES: Teaching Strategies to Meet the Needs of Today's Students

*J. Kwapis-Jaeger, RDH, MA & P. Zarkowski, JD, MPH
School of Dentistry, University of Detroit, Detroit, MI*

The interests, expectations and preferences of today's students differ from the students of the 1960-70's. The gap between students and faculty appears wider. What can faculty do to meet this challenge? During a three-year period, the Myers Briggs Type Indicator (MBTI) was administered to both dental hygiene students and their faculty, both clinical and basic science. Results of the study were then compared with national MBTI scores reported between

1971-1984. Three key factors to the teaching/learning environment are discussed. These factors include: the type of student currently seeking a college education; the data indicating the learning styles of these students and educators; and based on the data collected, suggestions for specific teaching techniques in the classroom, laboratory and clinic.

3) DENTAL HYGIENE PROCESS: An Organizing Principal for the Curriculum

*E. McIntyre, DipDH, BA, MEd, L. Murray, DipDH & S. Silverman, DipDH, BScD
Seneca College, Willowdale, ON*

The role of the dental hygienist is changing from that of a dental auxiliary with a set of delegated tasks to that of a dental health professional with a scope of practice. As educators, we should be mindful of these changes and critical of curriculae restricted to scientific fact and technical competency. As an alternative, similar to the nursing model, dental hygiene process is the organizing principle, central to the curriculum, which integrates scientific research with dental hygiene theory as it relates to clinical and community dental hygiene. At Seneca College, using principles of dental hygiene process, the curriculum is designed to develop problem-solving and critical thinking skills so that the dental hygiene graduate will be responsible and accountable for client-centred care in a variety of practice settings.

4) AN INTERACTIVE APPROACH TO EVALUATING CLINICAL TEACHING EFFECTIVENESS AND STUDENT PROFESSIONALISM

*N.R. Prouse, DipDH, BA, MEd, M.E. Kinneary, DipDH & M.G.E. Forgay, DipDH, BA, BEd, MA
School of Dental Hygiene, Dalhousie University, Halifax, NS*

One goal of dental hygiene education is the development of professional behaviour in the emerging colleague. To accomplish this, it is necessary to have clinical instructors who are acceptable role models. Clinical instructors need constructive feedback from students to further develop teaching effectiveness. A new program has been implemented by the School of Dental Hygiene at Dalhousie University that generates mutually acceptable evaluation forms that explicitly state expectations for instructor teaching effectiveness and student professional behaviour.

The objectives of this program were to: 1) identify expected behaviours mutually agreed to be important by students and instructors, 2) develop an instrument with written criteria with which to evaluate teaching effectiveness and provide formative feedback, 3) use the process of developing the instrument to discuss mutual expectations of faculty and students, and 4) use the instrument as one means of evaluating clinical teaching effectiveness and student professionalism.

The process for establishing mutually agreed expectations and written criteria involved:

1. A student workshop which generated two lists: students' expectations of instructors, and what students felt instructors should expect of them.
2. An instructor workshop which generated lists of their expectations of students, and what they felt students should expect of them.

3. Each group reviewed the expectations of the other, discussed differences, and modified the lists until they were mutually acceptable. These lists, in effect, became an informal contract for professional behaviour. Students and instructors found that several behavioural expectations were placed on both lists.

4. An instructor evaluation form describing acceptable and unacceptable instructor behaviours which affect the quality of teaching was designed using the generated criteria. A similar form was designed which could be used to evaluate student professional behaviour.

5. Students completed the form for each instructor twice during the academic year: once at approximately mid-point in the year and once at the end of the year. Students received daily feedback on professional behaviour as part of their clinical evaluation.

Clinical instructors and students have expressed satisfaction with this approach. It allows students the opportunity to evaluate instructor performance and provide feedback on predetermined criteria which they have established together with instructors. Instructors and students receive positive reinforcement for acceptable behaviours and formative feedback where improvement is needed. Both groups feel comfortable with this method of evaluation because there are no externally imposed criteria, only those mutually agreed to be important. Additional benefits include development of rapport and trust between students and instructors.

5) DECISION MAKING SKILLS FOR PRACTICE: A Teaching Model

*J.R. Gurenlian, RDH, MS & A.E. Eshenaur, RDH, MS
Thomas Jefferson University, Philadelphia, PA*

As part of the process of providing comprehensive oral health care, dental hygiene students must learn decision-making skills. The purpose of this paper is to describe an educational model designed to facilitate students' transition into private practice.

Within this model, students who have completed their graduation requirements early conduct a one-month clinical experience that simulates private practice. Students control the appointment schedule and make all decisions related to patient care and referral. The supervising dentist oversees treatment as would be customary in private practice. Students analyze the decisions made and experiment with strategies for managing conflicts related to standards of practice, patient compliance, infection control, etc. The model permits students to learn how to manage differences that may exist between the "ideal" taught in dental hygiene programs and the "reality" of private practice.

6) MOVING STUDENTS INTO A COLLABORATIVE LEARNING STYLE

*C.P. Drew, RDH, CDA, BS, MS &
S. Callaban Barnard
Bergen Community College, Paramus, NJ*

As dental hygiene pre-clinical and clinical educators, it is our desire to move the students from a passive learning state to one of active participation in their educational experience. This goal is most difficult to achieve by using only one teaching strategy. Many strategies must be introduced to accommodate the students' diversified learning styles and to open up the classroom for active participation and experimentation. Unfortunately, 85% of all college professors use only the lecture teaching format which tends to create a dependent, passive learner.

Through classroom experimentation at Bergen Community College, Department of Dental Hygiene, different strategies were implemented and assessed in the pre-clinical course. The classroom environment was actively challenged with the strategies of group enquiry and peer learning-teaching, resulting in moving the students from a dependent learning style into a collaborative interactive style.

This paper addresses these strategies and reviews the results of this course experiment. It was noted that peer involvement diminished competitiveness, fostered professional partnership, reduced anxiety and facilitated active involvement in the learning process. Also, the teachers became more sensitive to the students' individual learning style, resulting in empowering students to become life-long learners.

7) A MODEL FOR ENHANCING PRACTITIONERS' PARTICIPATION IN CLINICAL RESEARCH

*K.O. Hodges, RDH, MS
Idaho State University, Pocatello, ID*

This model demonstrates how collaboration between students and educators has resulted in published research. It also provides an example of how practitioners could collaborate to develop, implement, and publish clinical studies. Dental hygiene educators, as principle investigators in this model, design the study and meet with senior students to review objectives, hypothesis, and methodology. In some studies, standardization sessions for students are also conducted. Senior students gain the experience and satisfaction of having participated in projects within the clinical setting by identifying subjects from their patient caseload, obtaining informed consent, gathering data, and/or delivering treatment. Practitioners could easily transfer this model to their clinical practice by networking to identify a principle investigator(s) who would develop the proposal and co-ordinate research efforts. Dental hygienists in private practice or public health settings could then function similarly to the student roles previously mentioned. Practitioners might welcome the challenge of conducting clinical research when mentorship and training are available. Specific examples of co-operative research will be discussed.

8) A COMPARISON OF RUBBER-CUP POLISHING AND AIR-POLISHING

*D.L. Miller, RDH, MS & K.O. Hodges, RDH, MS
Idaho State University, Pocatello, ID*

This study was designed to compare clinically the effectiveness of rubber-cup polishing and air-polishing. Polishing time was controlled to approximate time spent on plaque and stain removal in clinical dental hygiene practice. Effectiveness of polishing techniques was evaluated using indices to measure plaque, stain, and gingival trauma prior to and after the polishing treatment. Thirty adult subjects with comparable numbers of teeth contralaterally exhibiting observable plaque and stain participated in the study. Patients with contraindications for either polishing technique were excluded from the sample. Data were collected using a randomized split mouth design; one side of a subject's mouth was polished with a rubber cup and flour of pumice, and the other side was polished with the Prophy-Jet air-polishing device. The time employed for both treatments was held constant at five minutes for each technique. Plaque, stain, and gingival trauma measurements were assessed prior to and following both polishing treatments.

Analysis of variance was utilized to analyze the data. Results indicate that, when comparing the effectiveness of polishing treatments, there is no statistically significant difference in plaque removal, stain removal, or gingival trauma within the established time interval. The authors conclude that other factors, in addition to effectiveness and time efficiency, need to be considered when selecting rubber-cup polishing or an air-polishing device.

9) NUTRITIONAL DEFICIENCIES IN THE ELDERLY: Oral Manifestations

*R.F. Ketron, RDH, EdD & K.D. James, PhD, RD
School of Public and Allied Health
East Tennessee State University, Johnson City, TN*

Because of rapid cellular turnover of epithelial tissues of the oral cavity, these tissues can be indicators of nutritional status. During the normal aging process, changes in oral tissue structure and function are expected; however, some changes involved with taste, painful or burning tongue, oral mucosal membrane pathology, temporomandibular joint pain, alveolar bone loss or periodontal disease experienced by the may be exacerbated by sub-clinical or overt nutritional deficiencies.

As dental care providers examine for and find abnormalities and lesions, the etiology must be investigated. The preferred treatment of causative dietary abnormalities is the prescription of a well-balanced diet. However, the dietary history may be indicative of a larger socio-economic problem. The dental care provider should refer and/or assist the elderly patient toward those medical and public health agencies and programs that may be of assistance to the elderly patient to obtain and consume that well-balanced diet.

10) AN EVALUATION OF THE EFFECTIVENESS OF THE SHORT-BLADE CURET FOR SUBGINGIVAL ROOT PLANING OF ANTERIOR TEETH

B.A. Long, SDT, DipDH, D.L. Singer, DDS, PhD & S. Lozanoff, BA, MS, PhD
College of Dentistry, University of Saskatchewan, Saskatoon, SK

A study is being undertaken to determine the effectiveness of a recently designed anterior short-blade curet. Comparison will be made with the traditional anterior curet in root planing subgingival root surfaces using an in vitro method.

Dentiform teeth, with the roots covered in oil-base paint to identify the surface contacted by the instruments, will be mounted in manikins and covered by artificial gingiva. Two groups of dental hygiene students will be instructed to undertake thorough root planing of incisors in a specified length of time. A cross-over design will be used whereby students will first use either the short-blade or the Gracey curet on teeth 11-12 and 31-32, and then the alternate instrument on the remaining teeth. Each set of teeth will be collected and compared based on the exposed root surfaces. A video-camera will be used to photograph the root surface of each tooth and an existing computer program modified to determine the extent of coloured material removal. A report of the progress to date as well as some insights into the instrument's development will be presented.

11) PERIODONTAL ASSESSMENT USING DNA PROBE-BASED MICROBIAL TESTS

D. Mancinelli Lyle, RDH, MS
Forsyth School for Dental Hygienists, Boston, MA

Periodontal disease is an infectious disease. Active or progressive destruction of bone and connective tissue has shown a direct association with three key pathogens: *Bacteroides gingivalis* (B.g.), *Bacteroides intermedius* (B.i.), and *Actinobacillus actinomycetemcomitans* (A.a.).

Historically, diagnosis and treatment of periodontal lesions has relied primarily on clinical parameters. However, this information does not provide the clinician with the means to monitor the progression of disease or to predict the potential loss of attachment.

Additional methods to diagnose periodontal infections are needed. A recent technological advance, the DNA probe, detects the key periodontal pathogens directly in clinical specimens by identifying nucleic acid sequences unique to the particular species. The new DNA probe-based microbial tests are a valuable and reliable adjunct to the diagnosis and management of periodontal infections.

12) RESEARCH OPPORTUNITY THROUGH COMMUNITY SERVICE

J. Clovis, DipDH, BEd, MSc, & M.G.E. Forgay, DipDH, BA, BEd, MA
School of Dental Hygiene, Dalhousie University, Halifax, NS

Research activity can be developed from requests for assistance by community agencies. With adequate attention to the needs of the community agency, dental hygiene faculty can foster a trust relationship which permits the development of both short- and long-term research activity. An example of this opportunity arose in 1987, when the Director of Nursing at a health care centre for the elderly in a religious order telephoned the the School of Dental Hygiene

requesting assistance in determining and meeting the oral health needs of the residents. Following a preliminary needs assessment, a program was initiated in 1988 to provide limited dental and dental hygiene care. After a repeat of the program in 1989, the administrators of the health care centre requested an expanded service. The response by dental and dental hygiene faculty was a comprehensive survey of oral hygiene status and reported behaviours. The data will be used to determine the potential for a satellite clinic at the health care centre and a geriatric rotation or externship program for all dental hygiene students. Program effectiveness can be measured by comparison of epidemiological and psychosocial data before and after educational and clinical interventions. The initial program was successful because it responded directly to an expressed need. The significant long-term research opportunity will be maintained only if the need continues to be met and empathic relationships with administrators, care givers, and residents are promoted.

13) COMMUNITY HEALTH: An Ideal Setting for Dental Hygiene Research

S.J. Cobban, DipDH & D. Kokaram, DipDH
Sturgeon Health Unit, St. Albert, AB

Dental Hygiene research is necessary to form the body of knowledge upon which the profession of dental hygiene is based. Community health can add should be seen as an ideal setting for this research to take place.

Local health boards have a good bank of demographic and health status data, and many have conducted community needs analyses. Community health dental hygienists are accustomed to gathering oral health status data and patient histories, and could gather research data simultaneously with the delivery of services. Involvement in dental hygiene research may serve to increase the profile of the community health hygienist among her professional colleagues.

The outcome of any research must be to raise the level of oral health and certainly that is consistent with the goals of community-based oral health programs. It is evident that dental hygiene research in a community health setting is an appropriate course of action.

14) DENTAL IMPLANTS: Clinical Assessment and Patient Satisfaction

K. Bapoo-Mohamed DipDH, Edmonton, AB

As dental implants become part of mainstream dentistry, dental professionals need to be apprised on the care, maintenance and efficacy of implants. The purpose of this paper is to present the preliminary findings of an ongoing survey of patients who have received implant therapy. The study was conducted by a dental hygienist during the daily routine of private dental practice. The survey had two components: clinical assessment of the implant prosthesis as determined by the Muhlemann Sulcus Bleeding Index (SBI), probing depths, mobility index and tissue condition; and a qualitative dimension in which patients were asked to show their personal thoughts on the impact that implants have made in their lives. This latter component was included in the study particularly because of the dearth of research on the psychological and psychosocial changes that patients experience following implant therapy. A brief discussion of the dental professional's role in the examination and assessment of the peri-implant tissue will be included.

Symposium Summary

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Barbara A. Zier and Janice F.L. Pimlott

The purpose of this symposium was to emphasize the relationship among clinical dental hygiene research, education, and dental hygiene practice, to explore the ways to participate in collaborative research and to investigate a conceptual framework for the dental hygiene profession. The program designed to meet this challenge included keynote addresses, panel discussions and workshops.

In her keynote presentation, Professor Bowen explained that dental hygienists have to move towards research-based practice in order to achieve professionalization and enhancement of clinical practice. To reach this goal will require the integrated efforts of researchers, educators and practitioners. These efforts must be organized and systematic to develop our body of knowledge.

Professor Bowen made us aware of the National Institute of Dental Research (NIDR) research priorities, and within this framework offered potential research questions and study areas for dental hygiene investigation. Health promotion and disease prevention should be a prime concern for dental hygiene research.

Next, drawing on the nursing profession experience, Dr. Janet Kerr proposed a research paradigm for emerging disciplines. She addressed the issues of professionalization, research and theory development explaining that the nursing metaparadigm includes person, health and environment, incorporating wholeness as an important concept. When discussing methods of enquiry she cautioned against sole reliance on quantitative data, emphasizing that a single measure will not capture all the dimensions of a construct. Dr. Kerr encouraged, as in nursing, that we seek to develop graduate education at the doctoral level within our own discipline.

Following Dr. Kerr's address we were fortunate to have Dr. Margaret Walsh who, in her trigger presentation, surpassed her goal to stimulate interest in a metaparadigm and conceptual models for dental hygiene as a framework for the evolution of the discipline. Four concepts central to dental hygiene in her opinion could form a metaparadigm for the discipline. Similar to Dr. Kerr's concepts are the client, the environment, health/oral health with addition of the dental hygiene actions.

Dr. Walsh explained that dental hygienists are unique in that they assist people achieve their optimum oral health potential through four processes: dental hygiene, communication, leadership and research. She emphasized that there need not be one conceptual model but many that

would meet the varying dimensions of dental hygiene. Dr. Walsh underscored that acceptance of the metaparadigm is an important step in the evolution of research and theory development.

The first reactor, Dr. Pat Johnson, focused on the practice dimension as being central to education, research and administration. She reminded us that missing to date in the evolution of dental hygiene are a well-articulated philosophy and theory-based models for practice. In selecting our conceptual models, attention must be paid to surfacing underlying assumptions. She stated that drawing on the nursing paradigm is appropriate because we are both care giving disciplines but we must ensure that it reflects the uniqueness of dental hygiene practice. Dr. Johnson's presentation reinforced Dr. Kerr's call for theoretical pluralism.

Dr. Irene Woodall reiterated the importance of assuring that conceptual models not be developed in isolation. She suggested that we define a way to close the gap between theory and practice. She went on to suggest that dental hygiene's metaparadigm be derived from defining dental hygiene's culture: who we are, what we want to keep, what we want to get rid of, what we do, and where we do it. Dr. Woodall agreed with Dr. Walsh's emphasis on the overall health of the client but asserted that we should also look at ourselves from that perspective.

Professor Denise Bowen, "as our short straw", brought closure to the panel, emphasizing that we had made great strides towards being recognized as primary care providers and collaborators. Again we were reminded that one model is not enough, that we need other conceptual models with different viewpoints. Each model has to be tested to look at the interrelationship of the variables. Professor Bowen suggested mechanisms for bridging the gap between practice and theory development by suggesting that we conduct studies to evaluate whether the quality of patient care is affected by delivery according to the professional model or the occupational model of dental hygiene.

Four working groups were created based on emerging priority areas. These groups included Clinical Dental Hygiene Therapeutic Modalities and Technology; Dental Hygiene Practice, Regulation and Quality Assurance; Epidemiology, Community Disease Prevention and Oral Health Promotion; and Dental Hygiene Education, Curriculum, Clinical Teaching and Evaluation. For an entire afternoon the four working groups participated in lively discussion and debate to develop research action plans.

The last day of the symposium began with poster and oral research presentations covering a variety of education and dental hygiene practice issues. We congratulate our presenters for their hard work and contribution to the program. The open session in the afternoon was the forum for the working group reports. It is hoped that by considering barriers, resources and opportunities for collaborative ventures that the mystique of research has been dispelled and dental hygienists will come to realize implementation in their own settings. We would be amiss not to thank our four group leaders and participants who toiled to put together the reports. Thanks particularly to Professor Joanne Clovis, Dr. Pat Johnson, Dr. Irene Woodall, and Professor Patricia Damon-Johnson.

This symposium exceeded our expectations. By realizing the significance of a dental hygiene metaparadigm we have indeed embarked on a process that will ultimately result in a unique body of knowledge. It is essential that we promote, within the dental hygiene community, the important relationship between research and professional practice. The momentum and enthusiasm must be sustained so that we can realize true evolution of dental hygiene as a scientific discipline. As Professor Bowen in her keynote address encouraged us, let's make the metaphor of the 90's be "to become neck-up hygienists" rather than "neck-down hygienists".

Appreciation is extended to the key speakers: Dr. Janet Kerr, Dr. Pat Johnson, Dr. Irene Woodall and Dr. Margaret Walsh. A special thanks to Professor Denise Bowen who laboured with us as we planned, organized and implemented these proceedings. Also we would like to recognize our faculty at the University of Alberta who deserve high praise for helping us co-ordinate the symposium.

Finally, our thanks to all the participants for their attendance and enthusiasm in helping to make our dream a reality.

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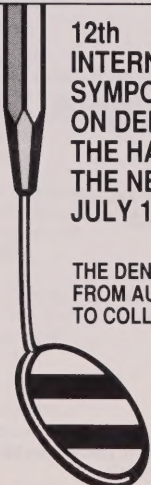
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CDHA Professional Conference 1991

Hotel Beauséjour

Moncton, New Brunswick

*Future of Health Care—Health Promotion
How will it impact on you and your profession?*

Thursday, June 6

7:00-10:00 pm

Friday, June 7

8:00-8:30 pm

8:00-8:30 pm

Wine & Cheese Reception and Registration

Registration



Evolution of Health Promotion

Dr Lynn McIntyre MD, MHSc, FRCPC, Member of
Community Medicine & Epidemiology Dept.,
Dalhousie University

This presentation will describe the evolution of health promotion from its nascency which focused upon lifestyle to its global concepts of managing the future. The words "health promotion" were first used in the famous 1974 document "A New Perspective on the Health of Canadians" also known as "The Lalonde Report".

In 1984, the World Health Organization defined health promotion as the process of enabling individuals to take control over and to maintain their health. Health was recognized as a resource for everyday living. The focus then turned from lifestyle factors (usually considered under the control of the individual) to more structural factors in society which support the types of choices that people ultimately make.

Achieving Health For All: A Framework for Health Promotion was released by Jake Epp, the Minister of National Health and Welfare in November 1986. It suggested three strategies for increasing health promotion: fostering public participation, strengthening community health services, and healthy public policy. Healthy public policy recognizes that all aspects of our governance (eg, education, agricultural, transportation policy) affect health.

The health promotion movement has had other spin-offs, one of which is the "Healthy Cities Movement" which was begun by another Canadian, Dr. Trevor Hancock and first adopted by Mayor John Savage in Dartmouth, Nova Scotia. The Healthy Cities Movement is widespread in Europe and over 100 communities participate in the Canadian version called the "Healthy Communities Movement".

Current Perspectives on Health Promotion in Canada

Dr Miriam Stewart PhD - Professor, School of Nursing, Dalhousie University and author of *Community Health Nursing in Canada*, 1985. Dr. Stewart's funded research deals with health promotion issues, including interdisciplinary collaboration.

10:30-12 noon

2:00-4:00 pm

evening

Saturday, June 8

9:00-4:00 pm

or

9:00-4:00 pm

Sunday, June 9-

Tuesday, June 11

Annual Session

This presentation will offer an overview of the "Health for All" movement in Canada, germane government initiatives, and implications for health professionals. Pertinent documents and developments in research, practice, and educational domains will be reviewed. Collaboration with members of other health-related disciplines and with consumers and communities will be emphasized. The relevance of other health promotion principles pertaining to accessibility and prevention will be suggested. Clearly health promotion has significance for health, health behaviour and health care in Canada.

Panel Discussion

Chair: Joanne Clovis, DipDH, BEd, MSc

Morning Speakers and invited guests will focus discussions on the challenges in Canada's health care system, barriers to the promotion of health, and potential mechanisms and strategies for promoting health including dental hygiene collaboration with other health professions.

Lobsterfest - Fisherman's Paradise, Shediac, NB

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Facing the Future-Oral Health Promotion

Professor Joanne Clovis - Director, School of Dental Hygiene, Dalhousie University and Ms. Sharon Amer - Advisor, Dental Health Standards, Health & Welfare Canada

Health Promotion Workshops

Facilitator: Ms. Lucy Brunet - External Consultant on Federal Government Steering Committee on Oral Health Promotion

Small group workshops will enable participants to better understand health promotion concepts, and to see how these concepts can apply to the areas of research, private practice, community health, education or public policy. Participants will also discuss what role health professionals may take in advocacy and implementing health promotion in Canada.

** A workshop will be provided for French-speaking participants.*

Recognition of serious oral disease

Dr. J. Natiella, Oral Pathologist and Chairman, Department of Stomatology and Interdisciplinary Sciences, S.U.N.Y., Buffalo, New York

"Is it fact or myth that we in dentistry presently employ 'state of the art' methodologies in disease detection? For certain diseases such as oral cancer cure rates directly linked to early recognition suggest we must modify some aspects of our practices.

This presentation will test our understanding of stomatologic disease utilizing representative cases for discussion. The clinical conference mode will enable us to decide which forks in the road we are to take into the year 2000."

CDHA Board of Directors (observers welcome)

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A big thank-you to all of you, for your time & commitment, in helping to ensure the success of this conference.



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CDHA Professional Conference — June 6 - June 11, 1991

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Registration Form

Full Registration - CDHA member or allied health professional

on or before April 15, 1991 175.00 + 7% GST=\$187.25

After April 15, 1991 200.00 + 7% GST=\$214.00

Student (full-time Dental Hygiene only) 125.00+7% GST=\$133.75

Daily Registration 100.00+7% GST=\$107.00

Extra Lobsterfest Tickets 35.00+7% GST=\$37.45

Non-member 350.00+7% GST=\$374.50

Full registration includes access to professional programs & all social events.

Daily registration includes access to professional program of the day.

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Registrations received prior to April 15, 1991 are eligible to win a registration refund.

Cancellation Policy:

If cancellation notice is received in writing prior to May 1st, 1991, a refund less \$25.00 administration fee will be issued; after May 1st a 50% refund will be issued.

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☐ Private Practice ☐ en français or ☐ Dr. Joseph Natiella

CDHA Sponsored Benefit Programs

—The first of a series—

The CDHA currently offers may benefit programs to its members. These benefits include Income Replacement plans (Long-Term Disability), Life Insurance and Health Coverage, Home and Automobile Insurance and Professional Liability (errors and omissions coverage).

Income Replacement Programs

There are two sponsored programs being offered by the CDHA. One is through Mutual of Omaha, and the other is provided by the Citadel Assurance Company. Both of these programs furnish income replacement for normal every day expenses while you cannot work because of a covered disability. The two programs are meant to cover the differing needs of the members. For those that only require the basic coverage, Mutual of Omaha has a very attractive package at a reasonable price. Should the member wish to have a top-of-the-line product, without regard to the price, then the Citadel offers such a product at a 10% saving over what is available in the market.

Life Insurance and Health Coverage

These benefits are furnished through Mutual of Omaha and are available to both the member and the member's family. A full range of Life Insurance (up to \$100,000) with attractive smoker/non-smoker rates is available.

The Health Coverage provides for 80% reimbursement on drugs, vision-care and semi-private hospital. In addition, an out-of-Canada Travel Protection Benefit and a Daily Cash Benefit payable while hospitalized are also available.

The CDHA sponsored Health Coverage also provides a full dental plan including major restorative and orthodontic benefits.

Home and Automobile Insurance

The CDHA is pleased to provide a Home and Automobile program to members that is cost-effective and convenient. You no longer have to pay for your automobile or home insurance every 6 or 12 months. Instead, you can elect to pay on a weekly basis through Electronic Funds Transfer right from your own bank.

The CDHA Plan is offered through the Canada Life Casualty Company. A principal advantage is that with a group plan you have a great deal more buying power when dealing with the insurance company. This leads to competitive pricing and personal service which is above industry standards.

The plan is structured so that even though you do not own a car you can still purchase home insurance, or you can purchase car insurance even though you still live at home.

Professional Liability Insurance

At this time the majority of the members across the country are utilizing the liability insurance program of their employer (usually dentists). The CDHA Professional Liability policy has been designed specifically to meet the requirements of dental hygienists. The policy provides hygienists with coverage as individuals rather than as a part of the dentist's overall package. This limits any potential conflict of interest when a professional liability suit is brought against a dentist and a dental hygienist simultaneously.

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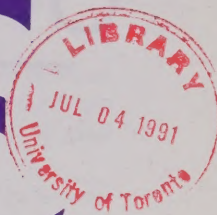
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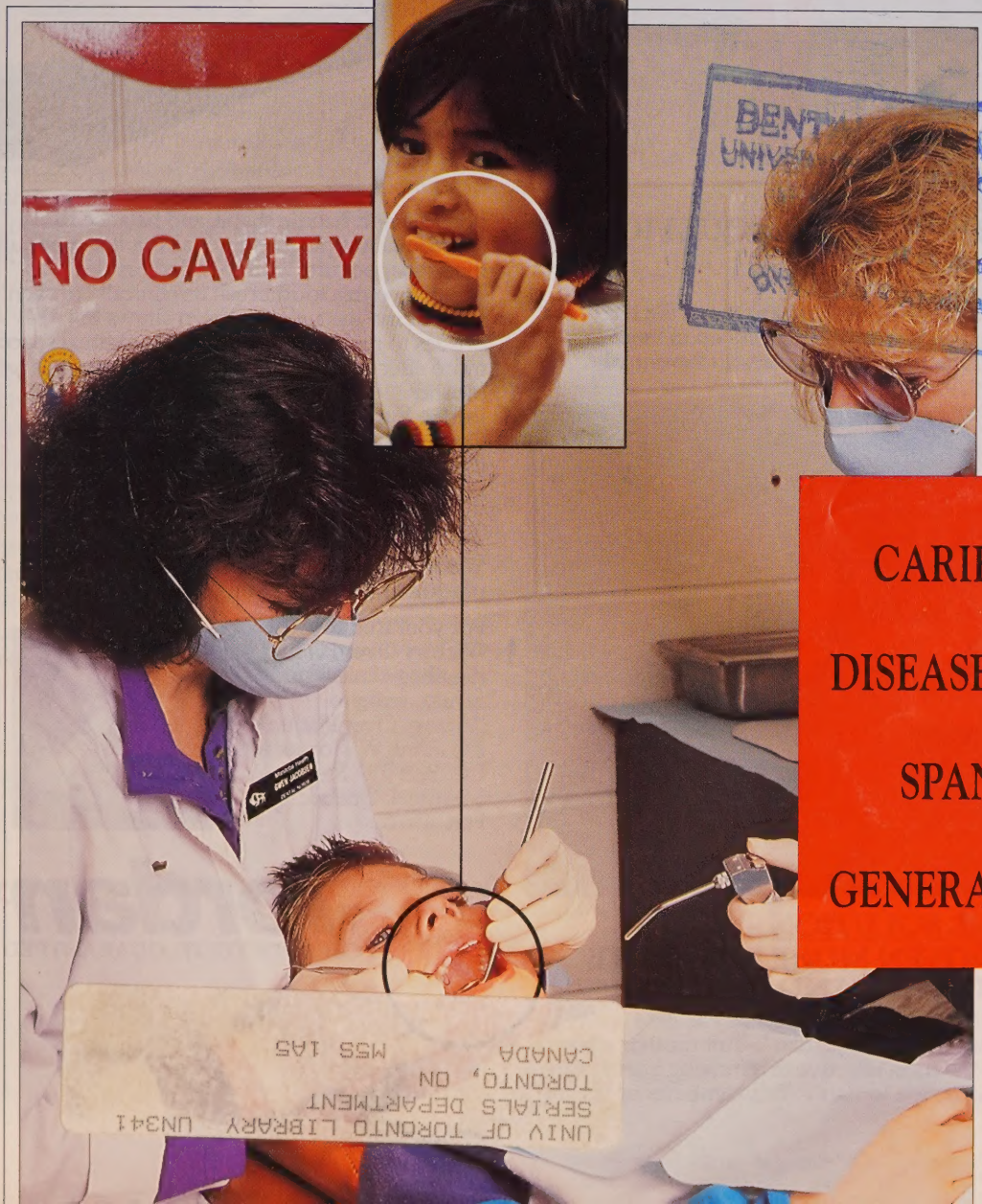
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PROBE



volume 25, no. 2

Summer 1991 été



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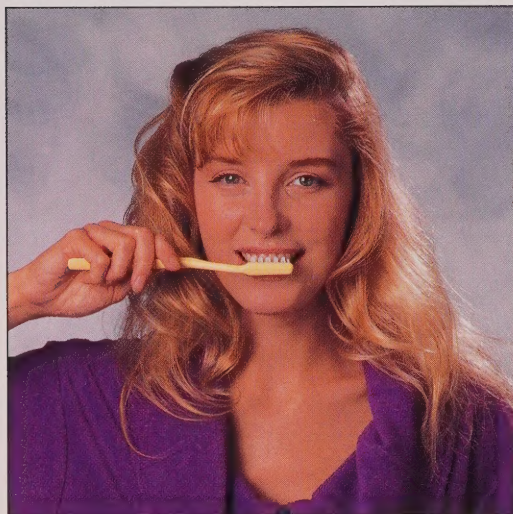
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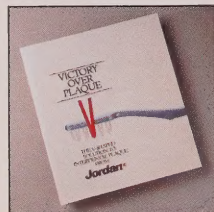
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President's Message



*Myrna Frizell
President*

As you receive this issue of PROBE I will be completing my term as President of the Canadian Dental Hygienists Association. Looking back over the recent accomplishments of our association and forward to the challenges which face us in the immediate future, one issue stands out clearly to me above all others – that of COMMUNICATION.

Providing an effective means of ensuring that members, provincial associations, and other key organizations are aware of and have input into the direction and activities of CDHA is an essential but difficult task to accomplish.

Three years ago the CDHA Board of Directors undertook a strategic planning initiative designed to move the Association from short-term planning and a reactive process of crisis management to proactive planning based on forecasting and defined and measurable objectives.

The restructuring of CDHA to increase the involvement of Board members, through the Councils, in the planning, implementation and evaluation of Association activities has strengthened the commitment, understanding and participation of all the directors toward meeting the objectives of the Association. Regional representation on Councils is providing for access by provincial associations and individual members to the working knowledge of a director from each province or region concerning all CDHA activities.

These organizational changes have resulted in a more cohesive knowledgeable and accountable association with a stronger national focus. Unfortunately, while our energies have been focused on making this new structure work well (and it is!), our communication with provincial associations and with individual CDHA members has been less effective. Former lines of communication with our provincial counterparts and outside groups now need to be reassessed and redefined. More emphasis must be placed on effective means of communication with members across the country. The responsibility of CDHA directors for communication must be more clearly defined and assumed.

Over the past year the Executive Council has been preparing a communication protocol to identify formal lines of communication for CDHA with provincial associations and external groups, as well as outlining the responsibilities of CDHA directors for communication with their provincial and regional counterparts and with individual CDHA members in their area. These formal commu-

nication links, once clearly understood and implemented should foster better information sharing and involvement for everyone.

Other less formal means of communication also need to be identified and addressed. More frequent newsletters are planned to keep everyone up-to-date on CDHA activities, as well as to provide opportunity whenever possible for input and direction from members. Presidential visits will continue to give occasion for questions and concerns to be raised by provincial associations, students and individual members with a member of the CDHA Executive Council.

Remember that as a CDHA member you have an important voice in this association. The CDHA director which you choose through your provincial association is responsible for representing you at the national level. To carry out their responsibilities, directors need your input for decision making. Give them the opportunity to share with you what they are doing on your behalf. Let them know what you want CDHA to be doing. Effective communication is open and two-way. As we learn to communicate more effectively, we will work together with a common vision and direction for our profession and our association.

It has been my privilege to serve as President of the Canadian Dental Hygienists Association. Thank you for the honour and trust you have granted me. This year has provided a legacy of friendship and memories I will not forget. ■

Now give your patients more than just good advice to chew on.



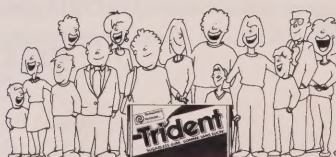
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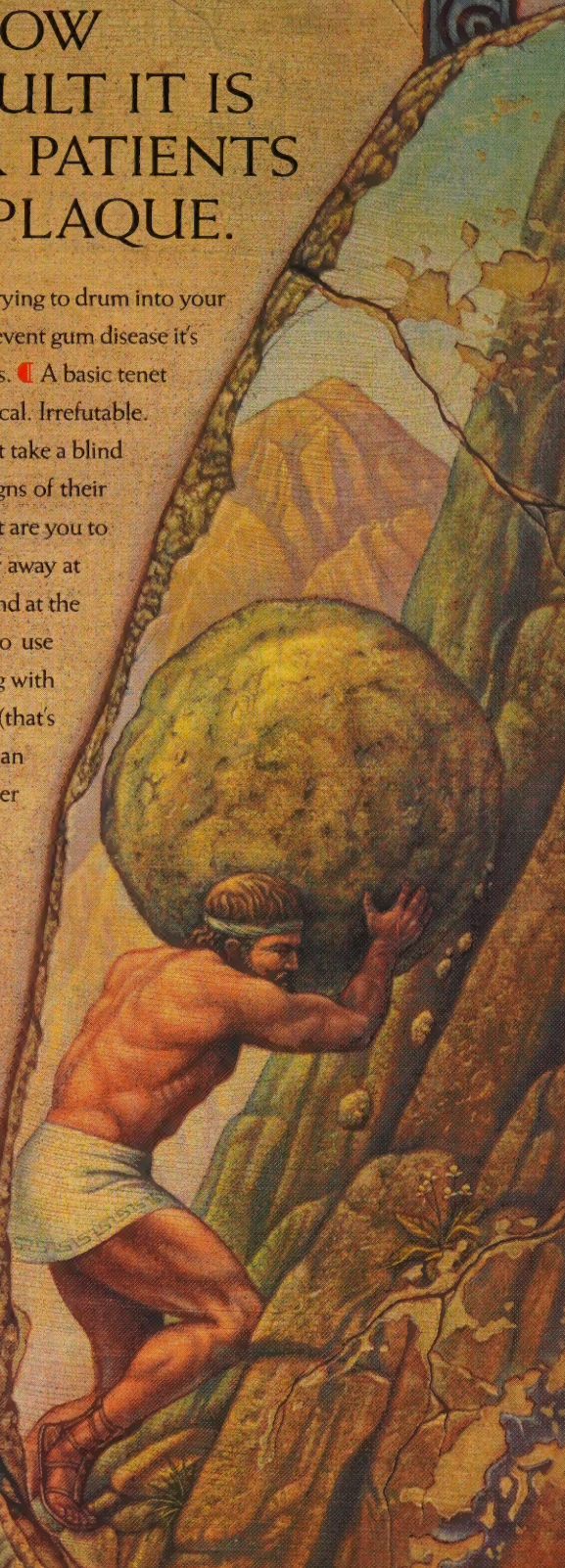
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REFERENCES: 1. Lanster J.B. et al. CLIN. PREV. DENT. 3:12-16, 1983. 2. Gordon J.M. et al. J. CLIN. PERIODONTOL. 12:697-704, 1985. 3. De Paoli L.G. et al. J. DENT. RES. 16:311-315, 1988. 4. Chieribito D. et al. J. CLIN. PERIODONTOL. 17:575-579, 1990. 5. Council on Dental Therapeutics Accepts Listerine. J. AMER. DENT. ASSOC. 117:515-516, 1988.



Caries, The Disease That Spans The Generations



Marilyn Goulding

One of the ten most prevalent earmarks of economic growth in this last decade of the century is said to be the boom of biotechnology (*Naisbitt & Aburdene, Megatrends 2000*). Research has begun to speak a new language; isogenic mutants, host response, and monoclonal antibodies. These terms needn't disturb you. The problems haven't changed; we merely view them in a new and smaller sphere, at the molecular and genetic level. And in this new world, science has discovered new combatants to enter the age-old war on dental caries.

Caries is still responsible for the loss of more teeth, at all ages, than any other dental disease. Fluoride has played a major, although not conclusive, role in the taming of this disease and controlled-studies data have been on record

since 1945, attesting to its efficacy. Research into the etiology of caries, the tooth structure, the role of diet, epidemiological studies to track and monitor trends, improved preventive/behavioural techniques, and biomaterials development has all generated a significant decline in the disease. Nevertheless, fifty percent of children still have dental caries and the potential for development grows larger as each year of aging occurs. In addition, an even greater percentage of older adults is affected by root caries, a difficult-to-treat form of the disease made possible by increased recession. Thus dental caries continues to be a significant threat to oral health across the lifespan and must not be thought of either as a disease of children or a disease of the past (*Broadening the Scope, National Institute of Dental Research*).

Responsibility on the part of dental hygienists falls into our primary role as preventive specialists. There are several areas of development in the caries reduction field currently not employed to full potential. Despite the overwhelming concurrence on the success of dental sealants there is a surprisingly low incidence of use. Parents deserve to be informed about this simple, safe, and effective procedure. Information on the

transmission of bacteria can be disseminated to new mothers and should be basic to patient education sessions. It has now been shown, in controlled studies, that mother/baby transmission can be reduced by treating mothers with antimicrobial mouthrinses such as chlorhexidine. Considering that this type of prevention may be in our future, the hygienist's realm should possibly include direction on appropriate continuing education courses for the dental team as a whole: better to prevent than stagnate? Dental hygienists need to keep up on this knowledge and strive to support the research being done.

Caries research did not end when fluoride was discovered. It is continuing in the areas of bacterial studies (the importance of serotypes), oral ecology (the interaction of bacteria), replacement therapy (developing avirulent species of streptococcal bacteria), and vaccine studies (genetically-altered bacteria that produce secretory antibodies in the saliva thus boosting host immunity). With the advent of industry into the research arena new impetus has been injected into the arm of discovery. And discovery will serve to develop new fields of study while continuing to broaden the scope of those established. Research has not left caries behind, have you? ■



Virginia Jamieson

Ms. Jamieson was elected Mayor of Dauphin, Manitoba in mid-December 1990, in a By-Election for a two-year term. She graduated in 1966, from School of Dental Hygiene, University of Manitoba, and worked in various parts of Canada prior to leaving the Dental field in 1980. Her Worship has the distinction of being the first woman elected as Mayor of Dauphin. ■

Degree Completion Program in Dental Hygiene

The Faculty of Dentistry at the University of British Columbia is pleased to announce the Senate approval of a Degree Completion Program in dental hygiene leading to a Bachelor of Dental Science. The program is designed to produce graduates who will have a broadened scientific education combined with the depth and proficiency in dental hygiene skills and knowledge necessary for basic and clinical sciences, health profession educators, and community health personnel. This academic program will provide an opportunity to acquire the necessary knowledge and skill-base in one of three areas: 1) community dental health, 2) advanced clinical practice with experience in specialized patient care, or 3) allied dental education and research.

Completion of the degree will require two, full years of course work with part-time study being available for completing the degree within a five-year period. Applicants must be a graduate of a dental hygiene program accredited by the Canadian Dental Association and have credit or equivalency in prerequisite sciences at the first-year university level. Admission will be limited and selection will be made on the basis of academic records, interview results and personal references. Implementation of this program is proposed for the 1992-93 academic year - and for more information write to: Faculty of Dentistry, Dean's Office, University of British Columbia, 350-2194 Health Sciences Mall, Vancouver, BC, V6T 1Z3 ■

The Impact of HIV and Other Infectious Agents on Oral Health Care

On April 16, 1991, the Canadian Dental Association reaffirmed its position that the public is not at risk of infection from HIV or other blood-borne pathogens in the dental office. This declaration followed the two-day conference, "The Impact of HIV and Other Infectious Agents on Oral Health Care".

The Conference, held in Ottawa and organized by the CDA in co-operation with the Federal Centre for Aids, featured presentations on the scientific, legal and ethical issues related to HIV in a dental setting. It brought together representatives of oral health care interests from Canada, including the CDHA.

A CDA working group has prepared a set of recommendations to be presented to the CDA Board of Governors at the Annual Meeting in August.

Basically, they include:

- continued promotion of the CDA infection control guidelines,
- expanded in-office monitoring programs,
- encouragement of infected or otherwise impaired dental professionals to disclose their condition, on a confidential basis, to provincial licensing bodies,
- encouragement of licensing authorities and provincial associations to set up mechanisms, where they do not already exist, to support individuals who become incapacitated,
- development of resource materials to expand the profession's knowledge in this area,
- ensuring that the dental school curriculum continues to provide adequate foundations for practice through its teachings of infection control procedures and ethics,
- continuing partnership with government and other professional groups to provide the public with accurate information on this issue.

In 1988, CDA issued national guidelines providing specific direction on infection control in relation to HIV. These have become an integral part of dental practice across Canada. One of the most encouraging facts to emerge at the Conference is that these guidelines are still deemed effective and appropriate. We have reprinted them in a special insert which you will find in the centre of this edition.

On the issue of treating the infected - those diagnosed as seropositive and those with AIDS - CDA and CDHA have been unequivocal. From both an ethical and a legal perspective, these individuals are entitled to dental care and the profession has a responsibility and an obligation to provide it - without prejudice. As stated in 1989, at the CDHA Annual Board of Directors' Meeting:

"The Canadian Dental Hygienists Association recognizes that dental hygienists have a responsibility both professionally and morally to offer dental hygiene care to all individuals including those who have, or may have, been exposed to any infectious disease."



Robert Dunford

**Welcome to Mr. Robert Dunford
Statistical Reviewer for Probe**

Mr. Robert Dunford has been assisting us over the past year with statistical review of scientific manuscripts.

He achieved his Bachelor of Science in mathematics from the State University of New York at Buffalo in 1975, and his Masters' Degree in statistics from that same institution in 1982. He has served as an instructor at Millard Fillmore College for three years and was a guest lecturer at Canisius College for four years. His current position is Programmer/Analyst and Chief Statistician for the Department of Oral Biology at the State University of New York at Buffalo. He has been co-investigator on a multitude of studies involving a wide range of periodontal concerns and has published a number of papers in this regard.

He has contributed a substantial amount of his own free time to CDHA, by assisting authors in their analyses of data and offering suggestions and alterations to submitted statistics. He has also been available, through the Scientific Editor, for guidance to authors in drafting their manuscripts.

We would like to acknowledge Mr. Dunford's valuable contribution to the journal. This type of expertise elevates the standing of Probe as a scientific journal thereby augmenting the perception of Canadian dental hygienists and the Canadian Dental Hygienists Association.

We welcome, and thank you Mr. Dunford. ■

National Dental Hygiene Campaign 1991

13-19 October

Last year's campaign reached approximately 100,000 people personally, and over 1,000,000 people saw displays, newspaper articles, banners, posters, signs, television coverage, or heard radio announcements. And again we thank F.W. Horner for their support in 1990.

It's never too early to start planning and tossing ideas around – and in response to suggestions made last year, yes, more information will be sent to every member.

So watch your mail. You can also contact your provincial co-ordinator (see list below) or Dawn Mueller, National Campaign Co-ordinator.

Let's make the '91 campaign an even greater success!

Nation Campaign

Co-ordinator

Dawn Mueller, 96 Deermeade Road SE, Calgary, Alberta. T2J 5Z5
H (403) 271-5393

Provincial Campaign

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Jo Gardner, P.O. Box 151, Madeira Park, B.C. V0N 2H0
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Canadian Forces

CWO Jacques Brisebois, 11919 Place Rivard, Quebec, Que. G2A 3N1
H (514) 842-0228 B (514) 844-5270

DENTAL HEALTH MONTH RADIO SPOTS

Last year, CDHA's radio information spots, sponsored by Crest and aired during Dental Health Month, were very well received. Their success enabled us to repeat the campaign with Crest during April '91.

The series 'Take Care of you Teeth' stressed the importance of preventive dental care and its relation to proper dental hygiene. Topics covered included: toothbrushes and toothpaste; dental floss; oral hygiene; gingivitis and pregnancy; and baby-tooth decay.



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Laura MacDonald
1192 Wolseley Ave.,
Winnipeg, Man.
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Information should include:

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Nominator's name and address

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Dr. L. Banta; McMaster University

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Limited registration: 40 persons

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Registration deadline: July 15, 1991.

Further information may be obtained by writing to:-

Dr. H.A. Lyttle	or	Ms. G. Macquarrie
Faculty of Dentistry		Canadian Dental Association
780 Bannatyne Ave.		1815 Alta Vista Dr.
Winnipeg		Ottawa
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AAP Annual Meeting to be Held in Vancouver, October 2-5, 1991

The American Academy of Periodontology's 77th Annual Meeting will be held at The Vancouver Trade and Convention Centre. Co-headquarters hotels will be The Pan Pacific Hotel and the Waterfront Centre Hotel. Open to Academy members, post-doctoral dental students, non-member dentists and dental hygienists, the meeting will feature new approaches in periodontal therapy, and the latest advances in the periodontal field. Numerous continuing education courses will also be offered.

For registration forms and additional information, write to:

The American Academy of Periodontology,
211 East Chicago Avenue, Suite 1400, Chicago,
IL 60611-2690, or call (312) 787-3670.



CDHA Annual Professional Conference, 1992, Vancouver, B.C.

June 4 - 6, 1992

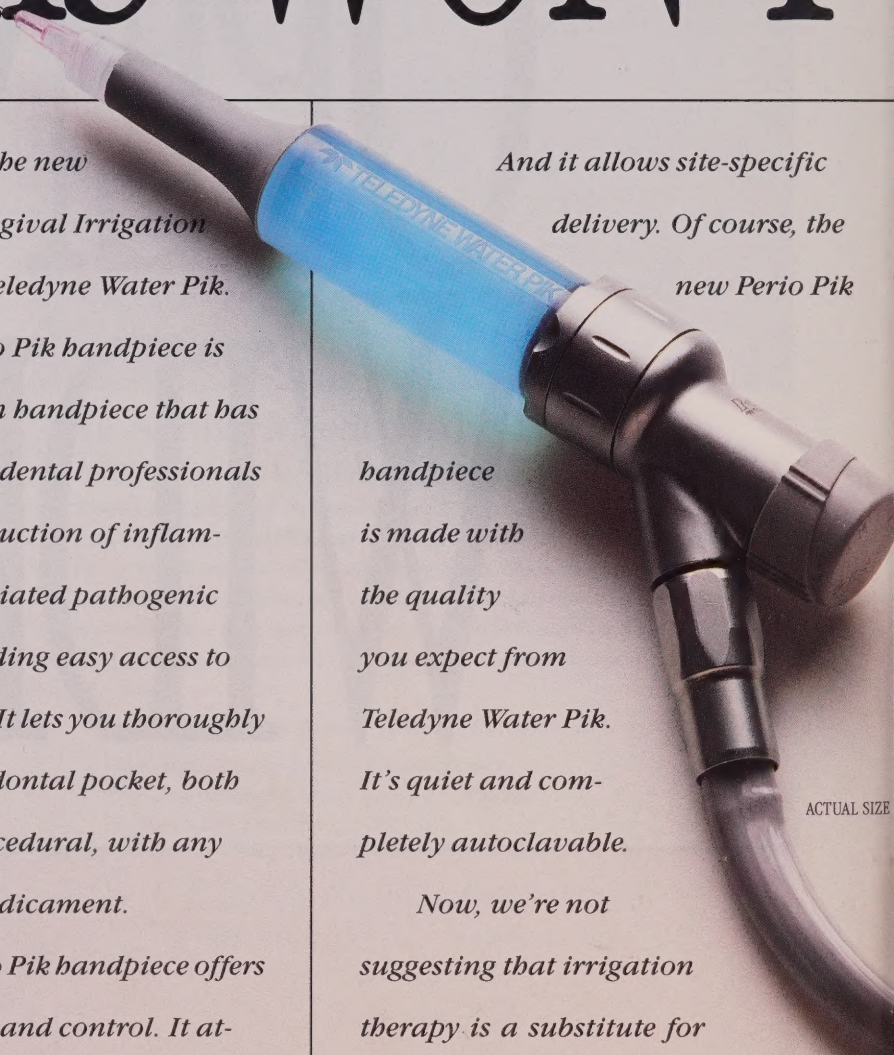
Focus - Older Adult

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Registration Requirements to Practise Dental Hygiene in Alberta

On November 1, 1990 the Premier of Alberta proclaimed in force the **Dental Disciplines Act**, making the Alberta Dental Hygienists' Association the registering body for dental hygienists wishing to practise in Alberta, Canada.

Practising hygienists must now be in possession of two documents:

- A. Certificate of Registration (proof of membership)
- B. Annual Certificate to Practise (licence)

The hygienist must apply for both documents before beginning active practice. It is recommended that the application process be initiated prior to moving to Alberta. The applicant should proceed as follows:

First:

Contact the Universities Co-ordinating Council to have clinical and educational background assessed by the UCC Professional Examination Board in Dental Hygiene. Enquiries may be directed to:

UCC Professional Examinations Office
c/o University of Alberta Materials Management Building
Edmonton, Alberta
T6G 2R3
Telephone: (403) 492-6862

The UCC evaluates the credentials of many professionals, including dental hygienists, wishing to practise in Alberta. It is a totally separate entity from the ADHA. The fees levied by the UCC to review dental hygiene credentials are independent of and additional to any Registration and Annual Certificate fees that the ADHA will assess.

After the UCC has determined that the applicant's educational and clinical qualifications are equivalent to or better than those of the University of Alberta Dental Hygiene Program, both the applicant and the ADHA will be notified that approval towards Professional Registration has been granted.

* The ADHA cannot process applications nor issue a Certificate of Registration or Annual Certificate to Practise until it has been notified of a successful UCC review.

Second:

Application should be made to the ADHA for the Certificate of Registration and the Annual Certificate to practise as required by the **Dental Disciplines Act**. Applications and/or enquiries should be made to:

Registrar, Alberta Dental Hygienists' Association
9720-45 Avenue
Edmonton, Alberta
T6E 5C5
Telephone: (403) 430-9649

The ADHA/CDHA Certificate of Registration (proof of membership) and the ADHA Annual Certificate (licence) is valid from November 1 to the following October 31. Fees are assessed annually and are prorated at the following intervals: Feb. 1, May 1, and Aug 1. * You cannot receive an Annual Certificate to practise dental hygiene in Alberta without being a Registered member of ADHA/CDHA.

If you are currently a member of the CDHA through the province you are now residing in, the CDHA portion of membership transfers to Alberta with you. You will be requested to submit a photocopy of your current CDHA Membership Card with your application for Registration and licensure in Alberta.

(Cont'd)

(Cont'd)

Licensure **is not transferable** from one province to another. To practise in Alberta, regardless of your licensure status in any other province, state, or country, you must comply with the ADHA Registration process.

An application must be made for a Certificate of Registration and the Annual Certificate if a dental hygienist wishes to practise full-time, part-time or for some portion of the year - even if it is just one day. Malpractice insurance will be invalid if the dental hygienist attempts to practise without the documents required by the **Dental Disciplines Act**. Fines and court action can and will be taken by the Government of Alberta for practising without the necessary documents.

Employment opportunities can be explored through the two ADHA Employment Officers:

Northern Alberta:

Ms. Janice Ritchie

30 Mardale Crescent

Sherwood Park, Alberta

Telephone: (403) 467-3799

Southern Alberta:

Ms. Vicki Duncanson

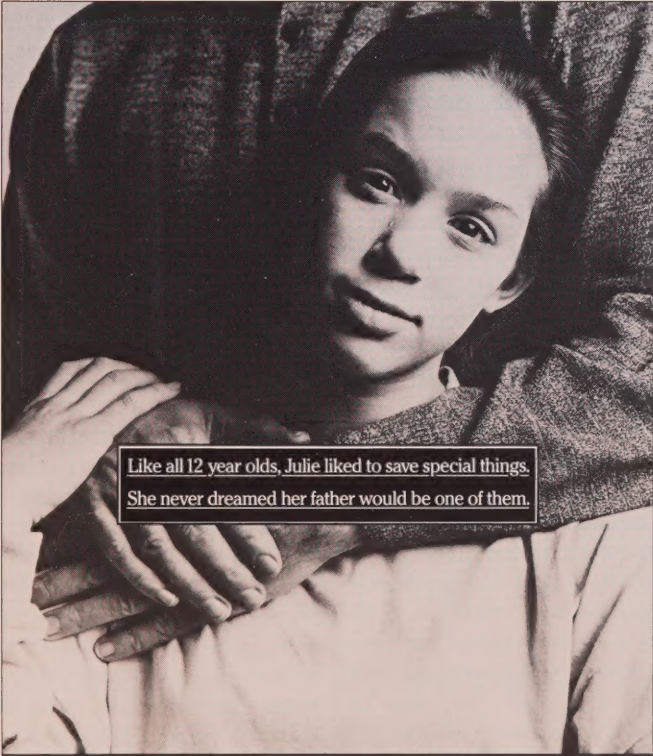
11-123-13 Avenue N.E.

Calgary, Alberta

T2E 1B5

Telephone: (403) 277-6297

These individuals volunteer their services and a fee is not assessed to the dental hygienist or to the employer. Private employment agencies are listed in the local telephone books. These agencies/individuals **do not** work on behalf of the ADHA and are totally independent of the ADHA.



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Monitoring Levels of Streptococcus Mutans: A Clinical Tool in Caries Prevention

By: M.E. Kinnear, RDH &
M.G.E. Forgay, DipDH,
BA, BEd, MA

Dalhousie University
Halifax, Nova Scotia

Dental caries is one of the most prevalent of diseases, and can result in expensive therapeutic measures, tooth loss, pain, and impaired masticatory function. While studies indicate that there is a general reduction in caries in most areas of the developed world, caries levels are increasing or remaining high in many developing countries.^{1,2,3,7} Even in developed countries there is evidence that a small proportion of individuals demonstrate relatively high caries rates. In the U.S. National Dental Caries Prevalence Study, and in other studies, about 20 per cent of children exhibited 60 per cent of the caries found.^{15,3,4,8} Caries is not only a problem of childhood. A relatively high incidence of new carious lesions has also been found in a population of older adults.¹⁴

Predictors are needed which will identify children and adults who are at high risk for caries so that preventive efforts may be focused on these individuals.

Dental caries is a multi-factorial disease involving three principal groups of factors: host (particularly saliva and teeth), substrate (i.e., the diet), and microflora. In considering microflora in the etiology of dental caries, it was previously believed that nonspecific acidogenic micro-organisms (i.e. any micro-organisms which produce acid) were responsible. This concept has been replaced in recent years by the view that specific bacteria are involved.^{9,7,13}

It is now recognized that the group of plaque-forming streptococci termed *Streptococcus mutans* represents a particular threat to the dentition.¹³ There is a strong correlation in epidemiological surveys between oral *S.mutans* and the prevalence of dental caries. In 1986, Kristofferson et al. found that children with high *S.mutans* counts had significantly higher decayed and filled surfaces than children with no detectable *S.mutans*.³ In 1983, Burt et al. found that high levels of infection with *S.mutans* tended to be associated with subsequent development of caries, while low levels of *S.mutans* infection resulted almost completely in tooth surfaces remaining sound.¹¹ *S.mutans* is a significant part of the intrinsic flora of carious lesions. Plaque associated with the development of incipient smooth surface enamel lesions



M. E. Kinnear



Marnie Forgay

contains higher proportions of *S.mutans* than plaque covering clinically sound enamel adjacent to the lesion.⁷

A clinical examination neither predicts caries activity nor indicates current caries susceptibility. Because of the proven relationship between *S.mutans* and dental caries, it is obvious that it would be useful to have a simple

method of determining *S.mutans* levels in patients to identify those who are predisposed to high caries activity, and also to monitor attempts to reduce caries susceptibility.^{4,7,12} This would serve to improve the cost/efficacy ratio of preventive treatment and allow preventive measures to be concentrated more efficiently on those individuals who require them most.

An ideal caries predictive test should be simple enough to be performed by non-dental personnel, be reproducible, be inexpensive, and applicable in mass as well as in the dental office.^{4,12} It should anticipate the onset of caries, be valid, reliable, and feasible. In dental research, caries activity tests can be used to aid in the selection of patients for caries studies, to help in the screening of potential therapeutic agents, and to serve as an indicator of periods of exacerbation or remission of disease. In clinical practice, caries activity tests can be used to determine the need for caries control measures, to motivate patients, to indicate patient compliance with suggested preventive measures, and to aid in planning appropriate recall intervals. Another use might also be as a guide prior to insertion of expensive restorations or orthodontic treatment, or as an aid in determining the success of preventive treatment.^{12,13}

The degree of infection with *S.mutans* in the oral cavity can be indicated by measuring *S.mutans* levels in the saliva. Until recently there has not been a simple quantitative test to do this. One such salivary test is now commercially available and can be readily used in clinical practice.^{7,10}

Cariescreen®, developed by research scientists at the Forsyth Dental Centre, and Apo Diagnostics Inc., Toronto, is a diagnostic test which meets the criteria of a good caries predictive test. Cariescreen® is an easy-to-use dip-slide culture system. The kit contains a dip-slide vial and a diluent vial, a bacitracin tablet, a CO₂ tablet, and a block of paraffin. Immediately prior to use of the kit, the bacitracin tablet is dissolved in the vial containing buffered saline diluent. Paraffin-stimulated saliva is collected in the diluent vial. The

dip-slide, which incorporates a modified MS (mitis salivarius medium), is immersed briefly in the diluted saliva. After addition of the CO₂-generating tablet to the dip-slide vial, the screw-cap dip-slide is closed tightly in the vial, which is then incubated for 2 days at 37°C. The *S.mutans* populations in saliva are then estimated by comparison with a colony density chart. The manufacturer recommends that patients with scores greater than 100,000 per ml be considered high risk.

A study was undertaken to illustrate the effect of toothbrushing on Cariescreen® test results. Thirty-seven dental hygiene students were the subjects for this study. All subjects were instructed to refrain from brushing after midnight prior to the saliva samples being collected at 10 AM the following day. After this collection the samples were identified by a code number, and incubated according to manufacturer's directions. Subjects brushed thoroughly immediately following the collection of the initial sample and were instructed to refrain from further brushing

until after collection of the second sample. Subjects were also instructed not to eat within 1 hour before the second sample. Two and one half hours later, a second sample was collected from each subject, identified by code, and incubated.

The tests were evaluated by the students after incubation and scores verified by a single faculty member. Any tests from students who had not strictly followed the protocol were

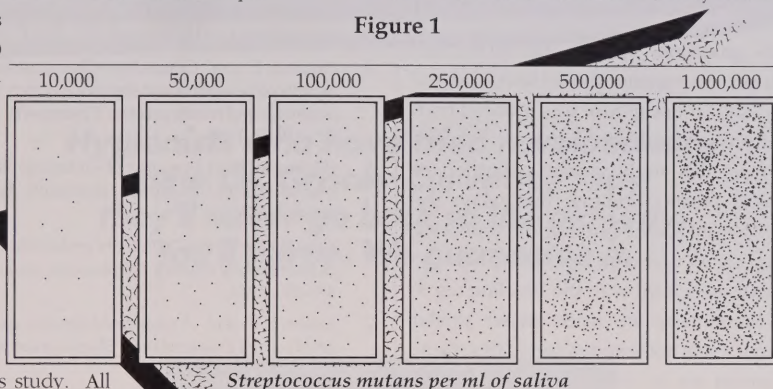
excluded from the results of this study. Seven test results were excluded.

Initial test results for the thirty remaining students showed a range from < 10,000 to > 1,000,000 *S.mutans* per ml.

In thirteen subjects, the scores

remained the same. In ten of these thirteen cases, the initial scores were <10,000 per ml, indicating very few or virtually no *S.mutans* present at the first test. In the remaining sixteen subjects, test scores decreased. Most scores decreased by one category, but five decreased by two categories, and two by three categories. In one subject the score increased between the first and the second test.

Figure 1



Streptococcus mutans per ml of saliva

Table 1
Distribution of Initial and Final Test Scores

Initial Score	N	Final Score	N	Category Change
10,000 (or less)	10	10,000	10	0
50,000	5	10,000	4	-1
		50,000	1	0
100,000	6	10,000	4	-2
		50,000	1	-1
		100,000	1	0
250,000	6	10,000	1	-3
		50,000	1	-2
		100,000	2	-1
		250,000	1	0
		500,000	1	+1
500,000	1	50,000	1	-3
1,000,000	2	500,000	2	-1

This study demonstrates that toothbrushing may clearly influence Cariescreen® test results in individual patients. Half of the subjects demonstrated a detectable decrease in Cariescreen® scores two hours after brushing compared to "pre-brushing" scores. The majority of subjects demonstrating no decrease in scores (10 of 13) already had scores close to zero, so reduction would not be expected to be observed with this group.

The manufacturer's guidelines indicate that individuals with scores of 100,000 per ml or greater should be considered "at risk". In this study, the "at risk group" was reduced from 15 to 7 through the effects of toothbrushing.

The implications from this study on the utilization of Cariescreen® in clinical practice indicate that when the Cariescreen® test is employed for the purpose of monitoring levels of *S.mutans* in patients, care must be taken to note the toothbrushing behaviour associated with the baseline test.^{5,6} and to ensure that future tests are made under similar circumstances. Although it was not tested as part of this study, the manufacturer's caution not to collect saliva within one hour after a meal should alert dental hygienists to also ensure consistency regarding meal ingestion between baseline behaviour and subsequent tests.

The use of a quantitative measure of salivary *S.mutans* can be of significant assistance in clinical dental hygiene practice. In a comprehensive preventive program it is important to identify those individuals who are at high risk for caries. Once these individuals have been identified, the clinician may then proceed to individualize preventive measures. These measures may include topical antimicrobials, pit and fissure sealants, fluoride regimens, plaque control measures, and diet counselling. More frequent recall examinations and retreatment should be considered as long as numbers of *S.mutans* remains high (i.e. over 100,000). To eliminate existing reservoirs of *S.mutans*, the patient should have all carious lesions restored. Until salivary *S.mutans* levels are below critical levels, extensive orthodontic or prosthodontic treatment should be deferred. For patients with a history of high salivary *S.mutans* counts, periodic monitoring should be maintained. ■

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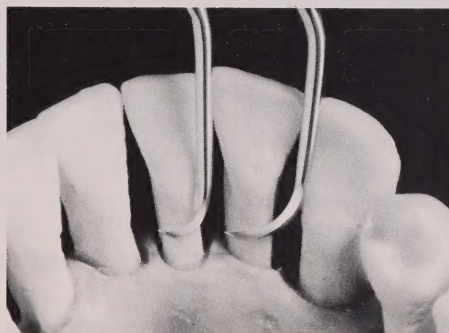
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Swampy Cree Tribal Council Dental Survey

Summary Report

By: *Bonnie J. Trodden,
RDH, BA, MA*

Introduction

This report forms part of my PhD thesis which compares the results of this study to a similar survey of the Manitoba Children's Dental Program. The dental survey was conducted during the spring of 1988 by Dr. Lisa Cohoe, at the request of the Swampy Cree Tribal Council. Dr. Cohoe provides service to six of the seven Swampy Cree reserves: Easterville, Grand Rapids, Moose Lake, Pukatawagan, Pelican Rapids and The Pas. The Indian Birch reserve was not included as there is no dental clinic available on this reserve.

The survey was very extensive, involving the collection of demographic data, utilization of dental services, a history of fluoride exposure, oral pathology, occlusion, and charting of decayed, missing and filled teeth for two groups of children, six- and thirteen-year-olds, from the six reserves serviced by Dr. Cohoe.

Only the results of the caries prevalence and treatment needs of this population are included in this report. For further information, or the results of the remainder of the study, please contact the author.

Materials and Methods

An attempt was made to examine all the children in each age group. The children in the survey were selected from school records. If there were children in the school records who were not attending school, an attempt was made to contact their parents or guardians to have them come in for the survey. There were a few 6-year olds in Pukatawagan who were not attending school and, although they were contacted, did not show up for their appointments. Between 90 and 100% of the six- and thirteen-year-old population were included in the survey.¹ The total number of children in each age group was 108.

The methodology was similar to that of the 1976 and 1982 surveys of Manitoba urban and rural children which used the Combined Oral Health and Treatment Assessment protocol published by the World Health Organization in 1971, and revised in 1977.^{2,3} All data were compared to the Dental Health Survey of Manitoba Children 1976⁴ in particular rural Manitoba children five and thirteen years of age. The results for rural Manitoba children in 1976 are more comparable to the SCTC population than the 1982 sample.⁵



Bonnie Trodden

Each child included in the survey was identified by a registration (examination) number in order to maintain confidentiality of the personal and clinical information collected. The personal information recorded included the age of each child, birthdate, grade in school, and location name (reserve).

Results

I. Conditions needing immediate attention

Table 1 shows the number of 13-year-old SCTC children requiring emergency treatment for relief of existing pain, or treatment of severe carious lesions likely to cause pain or infection, compared to Manitoba rural children. Overall, almost 16% of the survey population is in need of immediate treatment, primarily for severely decayed teeth. Pukatawagan (31%) and Easterville (14%) have the greatest proportion of children with severely affected teeth. Many of the children have more than one lesion requiring treatment, which is why the total for all the categories exceeds the actual number of children affected. Manitoba rural children in 1976 had a significantly lower number of children requiring immediate treatment.

Table 1. Immediate treatment requirements

	13 years		6 years	
	SCTC	Man.'76	SCTC	Man.'76
	N=108	N=175	N=108	N=175
Existing Pain	6	1	31	7
Future Pain?	16	9	46	5
Pulp Involved	1	10	23	18
Other	1	0	0	0
Total children affected	17	10	47	30
%	15.74	5.71	43.52	17.14

Table 1 also shows the number of 6-year-old SCTC children requiring emergency treatment for relief of existing pain, or treatment of severe carious lesions likely to cause pain or infection. Overall, 43% of the survey population is in need of immediate treatment, primarily for severely decayed teeth. Easterville (73%) and Pukatawagan (64%) have the greatest proportion of children with severely affected teeth. Many of the children have more than one lesion requiring treatment, which is why the total for all the categories exceeds the actual number of children affected.

Manitoba rural children in 1976 had a significantly lower number of children requiring immediate treatment. According

RECOMMENDATIONS FOR INFECTION CONTROL PROCEDURES CANADIAN DENTAL ASSOCIATION



INTRODUCTION

The Board of Governors of the Canadian Dental Association in March, 1988 approved "Recommendations for Infection Control Procedures". Subsequently, the recommendations were forwarded to every dentist in Canada. However, the Board appreciated that the effectiveness of the recommendations would be facilitated if they were accompanied by reasons which justified the procedures complemented by practical advice to implement the recommendations. This document has been developed in an attempt to satisfy these requirements. General practitioners and specialists are encouraged to apply this information in a diligent, conscientious manner. It is intended to protect dentists, their staff, and patients from disease transmission.

It is appreciated that the success of the recommendations depends upon the acceptance of two significant concepts.

1. That all dentists have to realize that it is both irresponsible and unethical to refuse treatment based solely upon the infectious status of a patient. If this philosophy is not universally adopted in conjunction with current infection control procedures, the public will continue to express reservations regarding the potential for disease transmission in the dental office.
2. That infection control procedures must allow for the fact that neither the dental office environment nor the nature of dental practice permit the sterility attainable in a hospital operating room. These concepts notwithstanding, dental health care workers must accept that there exists a risk — albeit a minimal one — of acquiring occupational related infections no matter the nature of their practice or extent of infection control protocols.

The following information has been arranged to coincide with the points which are sequentially listed in the "Recommendations for Infection Control Procedures". It is suggested that these be read prior to the remainder of this text.

MEDICAL HISTORY

The medical history of patients should be obtained at the initial examination and reviewed during recall visits. Medical histories, physical examinations and laboratory tests may not always reveal the presence of an infectious process.

Questions regarding medications, recent and past illnesses or operations, weight loss, swollen lymph glands, and oral problems may produce significant responses. Dentists should be familiar with the oral manifestations of infectious diseases, especially those which may be transmitted by dental treatment. Table 1 lists a number of diseases whose oral and general signs and symptoms should be known. (Table 1)

TABLE 1

COMMUNICABLE DISEASES	
SYPHILIS	HERPES SIMPLEX INFECTIONS
GONORRHEA	INFECTIOUS MONONUCLEOSIS
DIPHTHERIA	CYTOMEGALOVIRUS INFECTION
INFLUENZA	CHICKEN POX — SHINGLES
MEASLES	AIDS
MUMPS	HEPATITIS B AND D
CANDIDIASIS	HEPATITIS NON A AND NON B

Certain histories demand additional consideration. A previous history of hepatitis indicates that the patient's present hepatitis B antigen/antibody status should be determined. A positive hepatitis B surface antigen suggests that a current infection may exist or that the patient may be a chronic carrier. This could be valuable information for the patient and other health care workers. A positive hepatitis B surface antibody indicates that the patient will not transmit the infection. A history of exposure to human immunodeficiency virus (HIV) probably generates the most concern. Such a history does not necessarily imply that the patient has or will develop AIDS. Indeed, unlike the hepatitis B virus, there is a negligible risk of HIV being transmitted during dental treatment. Patients who are medically compromised, especially if related to: organ transplantation, chemotherapy or immunotherapy, are at a risk of acquiring infections from dental instruments, and the attending personnel if current infection control procedures are not adopted.

It is the realization that patients and staff may be asymptomatic but potentially infectious which has resulted in the recommendation that the same infection control protocols be used for all patients.

GLOVES

Gloves are the most effective method of isolating the fingers and hands of dental personnel from blood and saliva. In addition, they are the most visible evidence of infection control, and provide reassurance to patients when a fresh pair are donned in their presence. Gloves should not be worn indiscriminately. They are not to be used when greeting patients, handling records or radiographs, but only when performing intra-oral procedures or handling instruments to be used or used within and around the oral cavity. Gloves are disposable items and similar to injection needles, anaesthetic carpules, and saliva ejectors, must be discarded after use on each patient.

A latex, non-sterile glove is recommended for most dental procedures. Practitioners are encouraged to try different brands to assess comfort, strength and cost. Orthopedic gloves are resistant to tearing and snagging, and may be useful for endodontic and orthodontic procedures. Sterile gloves are suggested for invasive oral surgical procedures. To decrease the expense associated with gloving, for each recall patient, the practitioner may wish to remove the latex gloves, hand wash, and don either "food-handlers" or medical grade vinyl gloves. These are cheap, poorly shaped, and fit either hand; however, they provide sufficient protection to perform a recall examination, denture adjustment, suture removal, etc. After the examinations, the cheaper gloves are discarded, hands washed, and a fresh latex pair used for the ongoing dental procedure.

Although hypoallergenic gloves are available, most problems related to the wearing of gloves may be reduced if:

- gloves are worn only when required
- hands are dried before gloving
- a double refined corn-starched biodegradable powder is used as a liner.

Some authorities suggest that two pair of latex gloves be worn when treating high risk patients, such as those with hepatitis B. The rationale for this is that there will be a double thickness of latex to protect the skin from contaminated blood and saliva. However, if the treating staff have been adequately immunized against hepatitis B, this form of protection which reduces manual dexterity may be unwarranted.

Some surface organisms on gloves may be removed if gloved hands are properly washed. However, washing induces tears while increasing the thinness and porosity of gloves. It is for these reasons that authorities recommend that a fresh but appropriate pair of gloves (i.e. latex or vinyl) be used for each patient.

HAND WASHING

Hands, fingers, and nails harbour transient and resident microorganisms which are capable of transmitting disease. The potential for such spread is reduced by appropriate hand washing which eliminates most of these

organisms. A suggested technique is to wash the hands using an antimicrobial soap solution for 15 seconds, followed by rinsing under running water for 15 seconds. It is preferable if this two-phase cycle is repeated three times (total 90 seconds) before drying the hands with disposable paper towels. Hands should be washed before and after donning protective gloves.

There is some debate as to what are effective antimicrobial solutions. One school suggests that only liquids containing 4% chlorhexidine should be used, while another indicates that solutions containing para-chlorometaxyleneol (PCMX) are also effective and perhaps less damaging to the hands.

MASKS

Masks provide a barrier to the contamination of oral, nasal, and upper respiratory tract mucosa from micro-organisms residing in such locations either in patients or dental personnel. Many dental procedures require a close approximation of these separate locations which justifies the wearing of such a protection, especially when patients are medically compromised, the staff have upper respiratory tract infections, and/or the surrounding environment will be contaminated with blood and saliva products during high speed instrumentation, e.g. from handpieces and ultrasonic scalers. While it is not suggested that a fresh mask be worn for each patient, it must be appreciated that all masks lose their effectiveness upon becoming moist, which, depending upon the nature of treatment, may occur within one to two hours. The type of mask depends upon operator preference; however, folding surgical masks may become wetter faster than the preformed cone or cup type.

EYES

The exposed eyes of dental personnel are particularly vulnerable to the micro-organisms in the blood and saliva which are propelled into the atmosphere by high speed instruments. In addition, the eyes are exposed to damage from airborne particulate matter such as calculus and amalgam debris. It is recommended that the eyes of all treating staff be appropriately protected. This is partially accomplished by standard prescription glasses or glasses with plain lenses; however, the effect of this barrier is dramatically increased when protective side pieces are used. Glasses will become contaminated and should be washed in conjunction with hands using running water and an antimicrobial soap solution.

Clear face shields are now available for dental personnel. It is debatable if they offer greater protection than that provided by eyeglasses and masks. While their use is optional they may be advantageous to dentists with beards.

Consideration may be given to using protective eyeglasses for patients. These may be disposable or be capable of being subjected to chemical sterilization or high-level disinfection.

RUBBER DAM

A part from its known advantages in restorative dentistry, rubber dam provides an effective barrier to the spread of disease. The dam, by isolating an area of the mouth, protects dental personnel from exposure to blood, saliva and oral aspirations, all of which may harbour pathogenic organisms.

In this regard, two other practice techniques reduce the number of micro-organisms and hence reduce the risk of disease transmission. The first is the use of an antiseptic or antimicrobial mouthwash by the patient for 30 seconds prior to any intra-oral procedure, but especially before high speed instrumentation. The mouthwash will reduce temporarily the number of viable oral organisms. The second is to use high volume suction, which is an effective method of removing the blood and saliva splatter created by high-speed instruments.

IMMUNIZATION

A healthy life-style, combined with a nutritious diet and sensible exercise, maintains a resistance to disease, especially when combined with appropriate immunization. All dental care workers, especially females of child bearing age, should be adequately immunized against: hepatitis B, measles, mumps and rubella. This applies to treating staff and office and laboratory personnel. Staff prone to recurring influenza infections may wish to consider appropriate vaccinations.

The genetically engineered vaccines Recombivax-HB and Engerix-B have removed the excuse not to receive the initial hepatitis B vaccine Heptavax-B because it might theoretically transmit AIDS. All authorities recommend that vaccination against hepatitis B is a must for all dental personnel. Recent recommendations by the National Advisory Committee on Immunization clearly state that pregnancy is not a contra-indication for immunization against hepatitis B.

INSTRUMENT STERILIZATION

Present infection control techniques based upon the current knowledge of disease transmission demand that all instruments and devices used in and around the oral cavity be appropriately sterilized. Prior to a discussion of sterilization techniques, some terms should be defined.

1. TERMS

- (a) Sterilization — is the destruction of all life forms. It is a finite, definite state. An instrument is either sterilized or it is not. There is no state of partial sterility.
- (b) Disinfection — is the destruction of some but not all micro-organisms. It is a variable state, ranging from a low level when only minimally resistant organisms are destroyed, to a high level when all but very resistant organisms are destroyed. An instrument may be subjected to a low, medium, or high level of disinfection.
- (c) Cleaning — is any technique which removes visible debris, blood and saliva from an instrument. Cleaning

will reduce some but not all micro-organisms; therefore, by the previous definitions a clean instrument is disinfected but not sterilized.

2. STERILIZATION TECHNIQUES

In the general practice of dentistry there are four acceptable sterilization techniques.

- (a) Water Vapour under pressure — Autoclave
- (b) Chemical Vapour under pressure — Chemiclave
- (c) Dry Heat — Dry Heat Oven
- (d) Chemical — Liquid Sterilants

Each method has distinct advantages and disadvantages. No single technique will be suitable for all instruments, thus combinations of methods may be required. While the autoclave is suitable for oral surgery instruments and the dry heat oven for endodontic instruments, the chemiclave is adequate for most of the instrumentation used in general practice. Autoclaves, chemiclaves and dry heat ovens are precision instruments and the manufacturers' instructions must be followed with regard to: operating routine, preparation, packaging and loading of instruments, and maintenance schedules.

Sterility is a precise, biologic state and two quality assurance methods should be used to ensure that this state is maintained. The first relies upon process indicators and the second upon biologic monitors. Process indicators are usually made of paper, tape or cardboard, impregnated with a special ink which is designed to change colour once the package to which it is attached has been subjected to a specific temperature in the sterilizer. The main function of process indicators is to clearly designate which packages have been processed through the sterilization cycle; however, they do not prove that sterilization has occurred. This is the function of biologic monitors. Biologic monitors consist of tubes or envelopes containing known amounts of live, non pathogenic, bacterial spores which are very resistant to the high temperatures obtained in autoclaves, chemiclaves, and dry heat ovens. If the spores are made non viable during the sterilization cycle, it is reasonable to state that all other less resistant organisms have been destroyed and that the sterilizer is effective. To use the biologic monitor, it should be placed among instrument packages in an area where sterilization would be difficult. The usual sterilization cycle is completed and the biologic monitor recovered. It is then cultured along with an unsterilized control for at least 72 hours in a suitable incubator with an appropriate medium. If growth occurs, the medium changes colour. Accordingly, after exposure to an effective sterilization cycle, the monitor should produce no colour change in the medium, while the control should produce a definite colour alteration. With training, the incubation may be performed by dental staff, but it may be more appropriate to use hospital or commercial medical laboratories. The type of biologic monitor used must be related to the type of sterilizer. For

example, the spore *Bacillus stearothermophilus* is used to test autoclaves and chemiclaves, while *Bacillus subtilis* is for testing dry heat ovens. (Table 2)

TABLE 2

Spores	Sterilizer	Product
<i>Bacillus stearothermophilus</i>	Chemoclave	Sportest (MDT)
<i>Bacillus stearothermophilus</i>	Autoclave	Attest (3M) Sportest (MDT)
<i>Bacillus subtilis</i>	Dry Heat	Unispore (MDT)

These products are sold in sufficient quantity to monitor sterilizers for a 12-month period under normal circumstances.

It is suggested that process indicators be used with each sterilization load. Ideally, biologic monitors should be used on a daily basis. However, for general dental practice recommendations regarding frequency vary from weekly to monthly. Increasing the length of time between monitoring increases the chance of unknowingly relying upon an ineffective sterilizer.

It is good practice to follow the manufacturer's instructions for the preparation, packaging and loading of instruments into the sterilizer, while recording the results of regular biologic monitoring.

A fourth acceptable method is sterilization by suitable liquid sterilants; however, the disadvantages are many. To achieve sterility, instruments must be immersed in the solution for between 7-10 hours; thus, they are out of commission for the equivalent of a full working day. It is impossible to determine when the biocidal properties of the solutions are diminished or exhausted; therefore, to be safe, fresh solutions should be prepared for each load, which is both expensive and time consuming. (Table 3)

3. INSTRUMENT CLEANING

Following use, instruments may be stored in an acceptable liquid disinfectant (see below) prior to being cleaned. This allows some deactivation of micro-organisms to occur, and by preventing blood and protein from drying out, facilitates the removal of such debris. Instruments may be kept in the holding solution until there is sufficient time to initiate the sterilization cycle, the first phase of which is instrument cleaning. Two cleaning techniques

may be used either singly or in combination. The first involves the physical cleansing of the instruments under running water with a stiff bristle brush. The scrubbing is continued until all visible debris is removed. The second method utilizes an ultrasonic cleaner. The cleaner should be used according to the manufacturer's instructions and definitely with the lid closed.

As suggested above, either one or both of these techniques may be employed. Some authorities recommend that the physical cleaning should precede the ultrasonic cleaning. Others suggest that the ultrasonic method should be performed first, which has some validity as it will reduce microbiologic debris on the instruments, creating a safer environment for their physical cleansing. The cleaned instruments are dried with fresh paper towels and appropriately packaged according to the specific sterilization method.

Inevitably, instrument cleaning and sterilization will take place in the same area. Thus, it is wise to separate these two activities by as much space as possible (e.g. the cleaning on one side of the room and the sterilization on the other). If this is not possible, a clear vertical plastic barrier could be used to separate both activities if they must be performed on the same countertop.

4. LIQUID DISINFECTANTS

There are few Federal or Provincial Regulations concerning the effectiveness of disinfectants. Manufacturers and distributors have a certain licence in advertising the microbiocidal activities of their products. Indeed, the traditional methods of testing disinfectants are under review, which questions recommendations made by such an authoritative source as the United States Environmental Protection Agency (E.P.A.). However, it appears to be generally accepted that a high level disinfectant is one which deactivates the tubercle bacillus within a 30 minute exposure. Thus, by assessing the concentration of solution and the duration of exposure necessary to produce a tuberculocid activity, practitioners may compare and contrast disinfectants. Until there is a recognized standard for disinfectants it would seem appropriate to use recognized sterilants to achieve disinfection by reducing the immersion time and/or the concentration of the solution. However, this method is not only expensive but will expose staff to relatively toxic chemicals. It is accepted that in dentistry, disinfectants are used for two purposes. The first is as an immersion disinfectant for dirty instruments, prior to their cleaning and sterilization. The second is as a surface disinfectant for working areas contaminated by blood, saliva, and proteinaceous debris. As a general rule, recommended immersion disinfectants contain either glutaraldehyde or phenolic compounds, whereas surface disinfectants contain bleach and phenolic or iodophore compounds. (Table 3)

The effectiveness of liquid sterilants and disinfectants is only assured if the appropriate concentrations and exposure times are used.

INFECTION CONTROL PRODUCTS

*NOTE: The products listed in the following tables are available in Canada. The inclusion of a product on these tables does not imply that they are endorsed by the Canadian Dental Association nor that other products with similar active ingredients are less effective.

TABLE 3

CHEMICAL STERILANTS/DISINFECTANTS		
Product	Active Ingredients	Purpose
CIDEX 7		
INSTRUBEX-G	2% alkaline glutaraldehyde	S & D
SPOROCIDIN	2% alkaline glutaraldehyde with phenolic buffer	S & D
BIOCYDE-R	acidic glutaraldehyde with phenols	S & D
GLUTAREX	2% neutral glutaraldehyde	S & D
GLUTACIDE	2% aqueous glutaraldehyde	S & D
CHLORINE BLEACH	sodium hypochlorite (5% household bleach)	D (surface)
VIROCIDIN X	sodium hypochlorite with detergents	D (surface)
WESCODYNE		
BIOCIDE	1% available iodine	D (surface)
SURFEX-I	iodophor based	D (surface)
SURFEX-E	ethanol based	D (surface)
INSTRUBEX-E	ethanol based	D (immersion)
PATHEX	o-phenylphenol 9%	D (surface & immersion)
MULTICIDE PLUS	o-benzyl-p-chlorophenol 1%	
DURR SYSTEM	aldehydes, phenols and quaternary ammoniums	S & D

S = Sterilant

D = Disinfectant

The manufacturers' instructions must be followed to achieve these properties.

Surface - indicates that the disinfectant is usually applied to hard surfaces

Immersion - indicates that the instruments may be immersed in the disinfectant

HANDPIECES

Most modern handpieces are capable of being sterilized by steam or chemical vapour, and this should be an important consideration upon purchasing new or replacement pieces. To maintain this instrument in working order for a lengthy period, the manufacturer's directions regarding the nature and sequence of cleaning, lubricating and sterilizing the handpiece must be precisely followed. Immediately after use it is wise to flush water through the handpiece for 20-30 seconds to remove any oral fluids which may have been aspirated into the handpiece if a retraction valve is present. Additionally, it is good practice to flush out the water line prior to re-attaching the sterilized handpiece. Cleaning of the handpiece prior to sterilization usually involves wiping its surface with a hot water and detergent solution to remove all visible debris.

The use of non-sterilizable handpieces is not recommended; however, handpieces which cannot be sterilized must be subjected to a high level disinfection. This should be performed by a tuberculocidal disinfectant and since it is being applied to the surface of the handpiece iodophore or phenolic compounds are recommended. After flushing water through the handpiece, it is disconnected and cleaned in the usual manner. A 4x4 gauze is soaked in the liquid disinfectant, wrapped around the handpiece, and left for 15-30 minutes. Afterwards, residual disinfectant may be removed by wiping with sterile water or alcohol-soaked gauze. The water line is flushed again for 20-30 seconds and the handpiece re-attached. (Table 4)

TABLE 4

HANDPIECE DISINFECTANTS			
Product	Active Ingredient	Dilution with Water	Contact Time
WESCODYNE	Iodine	1:200	10 - 30 mins.
BIOCIDE	Iodine	1:200	10 - 30 mins.
PATHEX	Phenolics	1:32	10 mins.
MULTICIDE PLUS	Phenolics	1:32	10 mins.
SURFEX-E	Ethanol	concentrate	3 mins.

Air/water syringes and ultrasonic scalers should be treated in a similar manner as described for handpieces. Preferably, they should be sterilized but if not, high level disinfection is acceptable. Removable tips which can be sterilized are advantageous.

COUNTERTOPS

The normal airborne transmission of micro-organisms plus that generated by dental instrumentation, combined with the contamination of surfaces by dirty gloves and instruments, are all methods by which disease may be transmitted in the dental office, particularly the operator. Although organisms recovered from such areas are not considered major sources of infections emanating from the dental environment, it is wise to adopt a high standard of office cleanliness. Operatory hygiene is practised to reduce the microbial contamination of high risk sites, such as; counter tops, drawer pulls, bracket tables, light handles and switches, chairs, floors, and walls. It is an attempt to obtain a level of cleanliness in a relatively public place commensurate with the activities occurring within the particular office. Operatory hygiene ought to be performed, after each patient, and is accomplished by protection and/or disinfection.

Protection — All high risk areas are protected by disposable covers (water-proof paper, aluminum foil, saran wrap) or cloths which are washed prior to re-use. The protection should be removed by gloved hands and safely discarded, after each patient.

Disinfection — After each patient dismissal, the high risk sites are cleaned with a suitably diluted bleach, iodophore, or complex phenolic compound to remove all visible debris. The surfaces are then wiped a second time with the surface disinfectant until wet. The surfaces should not be dried but the liquid allowed to evaporate thus increasing the residual disinfecting properties of the solution.

Carpets are difficult to disinfect and are not recommended for operatory floors. All visible blood and splatters should be removed immediately from floors and walls. It is suggested that floors be washed daily with a disinfectant, and walls washed with a disinfectant on a regular, e.g. monthly, basis.

Two additional areas which are pertinent to operatory hygiene include the handling of X-ray film packages and laboratory procedures.

Once in the mouth, X-ray packages are contaminated with saliva and possibly blood. Food handler gloves should be donned, to protect latex gloves, while the film is retrieved and developed. The package and overgloves are safely discarded, with the latex protected hands being available for further intra-oral procedures. At least on a daily basis, the outer surface and openings of the developing equipment should be wiped or sprayed with a suitable compatible liquid disinfectant.

The principles of infection control and general cleanliness are applicable to the laboratory environment.

- (i) Impressions — All impressions should be rinsed under running water to remove all visible blood and saliva, disinfected, then cast or forwarded to the laboratory.

*Alginate Impression — Use recommended surface disinfectant (preferably in spray form) to cover impression, seal in protective bag for normal disinfectant time, then cast.

*Polyether Impression — Immerse in chlorine compound (VIROCIDIN X) for 2-3 minutes or spray with recommended surface disinfectant as above.

*Elastomeric Impression — May be immersed in all recommended disinfection solutions for the appropriate time. It appears as if 2% acidic glutaraldehyde solutions (Sterall) improve the surface detail of such impressions.

*Hydrocolloid Impression — It is not possible to provide a recommendation for disinfecting this material. Providing that disinfectants do not alter casts, it may be appropriate to decontaminate the casts by soaking in a disinfectant for the recommended time.

- (ii) Prosthesis — Intra-oral appliances should be disinfected prior to forwarding to the laboratory, and before insertion. A suitable disinfectant is VIROCIDIN X or 5% sodium hypochlorite (i.e. household bleach) diluted 1:10 with water for a ten minute exposure.

- (iii) Impression Trays — Trays should be cleaned after use and sterilized by heat.

- (iv) Rag Wheels, Brushes, Burs — After use, these should be cleaned of visible debris and stored in a suitable disinfectant. At least once a week they should be sterilized by heat.

- (v) Pumice — Pumice mixture is a medium for bacterial growth from saliva contaminated intra-oral appliances. This can be controlled by mixing pumice with 5% sodium hypochlorite diluted 1:20 with water and adding 3% green soap to keep the pumice suspended, or, pumice may be mixed with a phenolic or iodophore base liquid disinfectant. The pumice mix should be changed daily, with the empty pumice pan being heat sterilized, at least weekly.

- (vi) Countertops — The laboratory countertops should be protected from contamination or wiped down with disinfectant, in a similar manner as the operatory working surfaces.

- (vii) Commercial laboratory — Dental staff should ensure that commercial dental laboratories are aware of, and have adopted, appropriate infection control procedures.

DISPOSABLE MATERIALS

Whenever possible, disposable items should be used and discarded after use on each patient.

There has been much discussion regarding the handling and disposing of waste products generated by health care facilities, including private dental offices. The current trend, to consider as infectious all waste contaminated with blood and saliva, dictates a need for precise and expensive handling and disposal procedures which may not be warranted. The Canadian Standards Association (C.S.A.) has addressed this issue in a new policy "Handling of Waste Materials within Health Care Facilities". The C.S.A. adopts the following premises:

- (a) The simple presence of viable organisms does not constitute a hazard; a mechanism by which these organisms can infect a host must coexist. Since hepatitis B and HIV are usually transmitted by inoculation, the concern with blood per se is misplaced; this concern is more appropriately applied to clinical sharps. Infections acquired by waste handlers are rare and almost always associated with trauma. Vigorous efforts directed toward the prevention of these injuries deserve high priority; the incidence of both the wounds and accompanying infections can be reduced dramatically by adherence to safe procedures;
- (b) Absolute elimination of all risk is impossible. A realistic goal is the attainment of a reasonable degree of safety at all times without needlessly compromising efficiency."

Acceptance of these concepts offered by the C.S.A. allows development of a rational approach to the handling of wastes from the dental office.

- (i) Sharps — This includes: needles, syringes, blades, glass or other clinical items, such as, matrix bands, which could cause a cut or injury. In keeping with the C.S.A. recommendations, office procedures should be adopted which will minimize trauma from these items, especially when they are transferred between dental personnel and collected for disposal. Although some authorities suggest that needles not be recapped, it is probably safer if they are. Recapping, without danger of injury, is possible if hemostats or needle recapping devices are used.

All sharps should be placed in sturdy containers, which are identified as containing sharps. It is safer if the container is not completely filled and if it is secured by a tight fitting lid. Dental personnel should comply with pertinent municipal or provincial laws regarding the disposal of sharps originating from the private dental office.

- (ii) Blood, suctioned fluids — Such wastes may be carefully disposed of via a sanitary sewer system according to applicable regulations.
- (iii) Disposable materials — Included are gloves, masks, wipes, and protective disposable covers. Such items should be placed in sturdy, black and green, plastic bags.
- (iv) Waste disposal — The majority of wastes generated by the dental office are general waste and should be disposed of according to applicable federal, provincial, and municipal regulations.
- (v) Infectious waste — There are no clearly defined specific regulations concerning the handling or disposal of infectious waste products produced in the private dental office by treating patients known to be carriers of the hepatitis B or H.I. viruses. Accordingly, it is suggested that such disposable wastes be carefully bagged by staff wearing appropriate personal protection, and disposed of according to any applicable municipal, provincial or federal regulations.
- (vi) Details on all pertinent Federal, Provincial, and Municipal regulations should be available from local public health units.

WASH CYCLE

Clothing, especially uniforms which have been exposed to spatter from blood and saliva, are a potential source of infection. Fortunately, a high temperature wash (60°C to 70°C) with normal bleach concentration, followed by machine drying (100°C), will effectively disinfect such clothes. Aesthetically pleasing, comfortable gowns or coats which cover street clothes are available. Such uniforms should have long sleeves and high collars; alternatively, short

sleeved uniforms may be worn, which permit washing of the forearms. However, in either case, a change into street clothes will be necessary at the end of the day. In any case, gowns or uniforms should be changed whenever they become visibly soiled and preferably on a daily basis.

There is some debate among authorities as to whether caps should be worn by the treating staff on a regular basis. There would appear to be no harm in dental personnel adopting this precaution, if they have concerns about spatter, blood, and saliva, contaminating their hair.

TABLE 5

CLASS I	MAXIMUM INFECTION CONTROL
PERSONAL PROTECTION	— gloves, mask, uniform or gown, eyewear, cap (optional)
PROCEDURES	— any dental treatment which involves exposure to blood and saliva, especially when high speed instrumentation is used
CLASS II	MODERATE INFECTION CONTROL
PERSONAL PROTECTION	— gloves, uniform, eyewear and mask (both optional)
PROCEDURES	— any dental procedure which involves contact with intact oral mucosa with no blood and no blood spatter production
CLASS III	NO INFECTION CONTROL
PERSONAL PROTECTION	— nil
PROCEDURES	— any procedure which does not involve contact with the intra oral soft and hard tissues

CONCLUSION

The purpose of infection control in dentistry is to minimize the risk of exposure to pathogens by reducing the microbiologic burden. This burden is directly related to the procedures being performed and the health of patients and staff. Consequently, it is impossible to provide a comprehensive statement on infection control which will be applicable to every treatment in every office. However, this document has stressed three important areas: the sterilization of all reusable instruments; the disinfection of all high risk sites; and the immunization of all dental staff against hepatitis B. If these precautions are adopted, it is possible to vary the degree of personal protection, according to the procedure being performed. The classification (Table 5) illustrates this concept. However, it must be considered as flexible since each practitioner must decide, based upon a knowledge of disease transmission, what is the appropriate protection for a specific treatment.

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RECOMMENDED INFECTION CONTROL CHECKLIST

IMMUNIZATION

- * Get appropriate immunization, such as that for Hepatitis B.

BEFORE PATIENT TREATMENT

- * Obtain medical history (but don't rely upon 100%)
- * Disinfect prostheses and appliances received from lab.

DURING PATIENT TREATMENT

- * Barrier techniques - gloves, masks, protective eyewear, uniforms.
- * Use rubber dam & high volume evacuation where appropriate.
- * Pay special attention to hands and skin - wash before and after gloving using anti-microbial soap with residual activity - such as Chlorhexidine, PCMX, or Triclosan.
- * Use lotion or creme as needed.
- * Avoid injury with sharp instruments and needles (SHARPS CONTAINER).

AFTER PATIENT TREATMENT

- * Wear heavy duty rubber gloves for all cleaning and disinfecting procedures.
- * Clean instruments thoroughly in a 2 step process:
 - A. Disinfection in a 2% Alkaline Glutaraldehyde for 20 minutes to minimize handling risk.
 - B. Clean in an ultrasonic machine if available using an enzymatic ultrasonic cleaning solution.
- * Sterilize instruments that penetrate soft tissue or bone, or come in contact with oral mucosa.
- * Monitor the sterilizer periodically with biological monitors.
- * Clean and disinfect/sterilize handpieces, air/water syringes, and ultrasonic scaler as follows:
 - A. Flush by running 20-30 seconds
 - B. Wipe off with high level EPA approved disinfectant such as an Iodophor
 - C. Sterilize if possible, otherwise use wrap technique as follows:
 - Gauze 2x2 saturated in Iodophor wrapped around the head 15-30 minutes
 - Rinse under running water and wipe off with alcohol.
- * Decontaminate working surfaces with Iodophor disinfectant/cleaner. Note: Use Fantastik or equivalent weekly to neutralize any possible long-term staining of light coloured surfaces.
- * Clean and disinfect vacuum system daily (or minimum 3 times weekly) with Enzymatic vacuum system cleaner. Disinfect prior to cleaning trap with Iodophor disinfectant/cleaner, holding in line for 5 minute contact time and finally rinsing with water.
- * Wash uniform in hot water (60 C) with bleach. Dry on hot setting.
- * Remove contaminated wastes appropriately.
- * Remove gloves and wash hands.



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to the 1976 Manitoba survey, the percentages were higher for rural children than urban children for all three types of conditions and for all age groups, with the rural children aged nine years in the greatest need of treatment.⁴

A Chi-Square analysis was done to see whether there was a significant difference in the number of children requiring immediate treatment between the two populations. The SCTC 13-year-olds were compared to Manitoba rural children 13 years old. The total number of children was divided into those requiring immediate treatment, and those who did not.

The Chi-Square = 7.78 with a $p < .0053$. There is a significant difference between the immediate treatment needs of 13-year-olds in the two populations.

The SCTC 6-year-olds were compared to Manitoba rural children 5 years old. The total number of children was divided into those requiring immediate treatment, and those who did not. The Chi-Square = 23.46 with a $p < .0001$. There is a highly significant difference between the immediate treatment needs of 6-year-olds in the two populations.

II. Dental caries status and treatment of teeth

A. Treatment Needs - 13 Years

The total number of one-, two-, three-, and more than three-surface restorations required, and the number of extractions required, was calculated separately for each age group. The treatment needs of the 13-year-old SCTC children (Table 2) are lower in almost all categories compared to the 1976 and 1982 surveys of Manitoba rural and urban children.^{4,5} The average number of teeth requiring treatment for SCTC children is 2.07, while 4.11 teeth required treatment in Manitoba rural children in 1976.⁴

Table 2. Decayed teeth

	13 years		6 years			
	Total	Mean	Total	Mean		
	SCTC (N=108)	Man.'76 (N=175)	SCTC (N=108)	Man.'76 (N=175)		
Decayed - no treatment			132	1.22	NA	
One-surface restoration	120	1.11	2.41	64	0.59	1.54
Two-surface restoration	78	0.72	1.11	126	1.17	1.19
Three-surface restoration	11	0.10	0.19	12	0.11	0.18
>than three-surface/crown	2	0.02	0.03	103	0.95	0.15
Extraction	13	0.12	0.37	45	0.42	0.19
Total Decayed Teeth	224	2.07	4.11	482	4.46	3.25

A Chi-Square analysis was done to see whether there were significant differences in the types of treatment required between the two populations. The SCTC 13-year-olds were compared to Manitoba rural children 13 years old. The total number of decayed teeth (treatment required) was divided

into those teeth requiring one-surface restorations, and those requiring more than a one-surface restoration. The Chi-Square = 1.83 with a $p < .1758$. There is no significant difference between the two populations in the type of treatment required.

B. Treatment Needs - 6 Years

The total number of one-, two-, three-, and more than three-surface restorations required, and the number of extractions required in deciduous teeth, was calculated for 6-year-olds. This population is compared to 1976 rural Manitoba children aged 5 years (Table 2).

Although these results are not truly comparable, it is apparent that the SCTC population has a greater number of deciduous teeth requiring treatment and particularly those children with teeth requiring extensive restorations (crown, pulpotomy, etc.) or extractions.

A Chi-Square analysis was done to see whether there was a significant difference between the total number of deciduous teeth requiring one-surface restorations and the number of teeth requiring more than a one-surface restoration for the two populations.

For the SCTC population the codes for each category of decay were added together to get the "d" sum for deciduous teeth. The first category (decayed, no treatment) was included in the total for SCTC children. This category comprises 27% of the total amount of decay, but it is unknown what proportion belongs in each of the other categories, i.e., what proportion of are one-surface, two-surface, three-surface cavities, etc. It was decided to divide the total number in half, designating 50% as a one-surface cavity, and 50% as involving more than one surface, as most of the teeth in this category were deciduous anterior teeth.^{1,7}

The Chi-square = 32.74 with a $p < .0001$. There is a highly significant difference between the two populations in the number of one-surface restorations required. The SCTC population has an extremely high proportion (54%) of children requiring more extensive restorations.

C. DMFT - 13 Years

The total number of decayed, missing and filled teeth was calculated for each age group separately. The sum of the decayed teeth was derived by adding together a total of more than 15 different codes for each age group. The population is again compared to the 1976 sample of rural Manitoba children (Table 4).⁴

The D/DMF index shows that, because the SCTC population has an average of more restorations per child, the number of decayed (unrestored) teeth contributes less to the total DMFT than it does in the sample of rural Manitoba children.

The value for the mean number of decayed teeth in Manitoba rural children in Table 2 (4.11) differs from the "D" value of 3.85 given in Table III-9 of the 1976 report.² The reason for this discrepancy is that the "D" value in Table 2 includes those teeth requiring extraction. It was assumed that these teeth required extraction as a result of caries, as no explanation was given for omitting this category in the 1976 Manitoba survey. The total DMFT is therefore higher than the 6.67 quoted in the 1976 report.⁴

A Chi-Square analysis was done to see whether there were significant differences between the two populations. The SCTC population was compared to Manitoba rural children age 13 years. The "D" and "M" components were added together (no treatment and unsuccessful treatment), and compared to the "F" component (successful treatment).

The Chi-Square = 110.14 with a $p < .0001$. This value is highly significant, i.e., there is a significant difference between the two groups. The "D+M" components comprise a significantly lower proportion of the total DMFT for the SCTC population.

Table 3. deft/DMFT

	13 years		6 years	
	Total	Mean	Total	Mean
	SCTC (N=108)	Man.'76 (N=175)	SCTC (N=108)	Man.'76 (N=175)
Number of decayed teeth	224	2.07	411	5.03
Number of missing teeth	28	0.26	0.34	1.51
Number of filled teeth	419	3.88	2.47	1.78
Total	671	6.21	6.92	8.32
D/DMF INDEX	224/671	.33	.59	
d/def INDEX			482/826	.58

D. deft/DMFT - 6 Years

The total number of decayed, missing and filled deciduous and permanent teeth was calculated for the 6-year-old group. The sum of the decayed teeth was derived by adding together a total of more than 15 different codes. This population is compared to the 1976 sample of rural Manitoba children aged 5 years.⁴

Although these results are not truly comparable, the average numbers are considerably higher for the SCTC population for all three categories. The d/def index (Table 3) shows, however, that the decayed component is a smaller proportion of the total in the SCTC population, while the number of missing (due to caries) and filled teeth comprise a much larger proportion of the total deft.

The value for the mean number of decayed deciduous teeth in Manitoba rural children in Table 3 (3.25) differs from the "d" value of 3.18 given in Table III-9.⁴ The reason for this

discrepancy is unknown, as no explanation was given in the 1976 Manitoba survey. The total deft is therefore higher than the 4.22 quoted in the 1976 report.⁴

A Chi-Square analysis was done to see whether there was a significant difference between the two populations. For SCTC children the decayed and missing deciduous teeth, plus the decayed and missing permanent teeth were compared to the filled component of the deft and DMFT. For Manitoba rural children the decayed and missing deciduous teeth plus the decayed and missing permanent teeth, were compared to the filled component of the deft and DMFT.

The Chi-Square = 0.26 with a $p < .6094$. There is, therefore, no significant difference between the two groups.

E. Dental Caries Status by Reserve - 13-year-olds

The dental caries data were divided by reserve in addition to age in order to see if there were significant differences between reserves. The mean "D", "M", and "F" components were calculated separately for each reserve. The "S" value is the mean number of sound permanent teeth per child (Table 4).

Table 4. Mean DMFT by Reserve - 13 years

	N	S	D+M	F	s.d.
Easterville	14	18.79	3.36	5.79	2.74
Grand Rapids	14	22.07	0.71	4.07	4.79
Moose Lake	24	20.79	2.75	3.67	2.67
Pukatawagan	22	21.00	3.72	2.77	3.56
Pelican Rapids	11	21.00	2.54	2.91	3.08
The Pas	23	21.44	0.82	4.35	2.57
Mean					
All Reserves	108	20.89	2.33	3.88	3.11

For the Chi-Square analysis the "D" and "M" components were added together (no treatment and unsuccessful treatment), and compared to the "F" component (successful treatment). The sample from Easterville was compared to the other reserves combined to see if there was a significant difference in this sample as it has the highest DMFT rate of all the reserves.

The Chi-Square = .047 with a $p < .8279$. There is no significant difference between Easterville and the other reserves for 13-year-olds.

F. Dental Caries Status by Reserve - 6-year-olds

The total sample of 6-year-olds was also divided by reserve, and the deft and DMFT was calculated separately for each group (Table 5). The mean "d", "e", "f" and "D", "M", "F" components were calculated for each reserve. The "s" value is the mean number of sound deciduous teeth per child.

Table 5. Mean deft and DMFT by Reserve - 6 years

	N	S	d+e	f	s.d.	D+M	F	s.d.
Easterville	15	10.53	9.93	1.67	3.16	0.87	0.07	1.22
Grand Rapids	21	16.91	3.33	1.62	4.13	0.48	0.14	1.24
Moose Lake	15	14.07	6.47	1.80	3.92	0.93	0.07	1.07
Pukatawagan	14	12.72	7.29	1.86	3.21	1.00	0.14	1.10
Pelican Rapids	11	14.73	6.27	2.36	3.08	0.36	0.00	0.81
The Pas	32	15.78	4.93	1.34	3.70	0.19	0.13	0.86
All Reserves	108	14.53	5.97	1.68	4.15	0.57	0.10	1.08

For the Chi-Square analysis the same procedure was followed for the 6-year-olds as for the 13-year-olds. The sample from Easterville was compared to the other reserves combined to see if there was a significant difference in this sample, as it has the highest combined deft/DMFT rate of all the reserves. The Chi-Square = 8.07 with a $p < .0045$. There is, therefore, a highly significant difference between the def+DMF for Easterville compared to the other reserves for 6-year-olds.

The high decay rates in Easterville are probably the result of a combination of factors; diet, parental attitudes toward dental care and nursing bottle caries. Access to candy stores is about equal on the various reserves. Attitudes toward dental care may be better among the children in Pelican Rapids than on the other reserves because the school nutritionist there is very involved in improving dental health. She runs the fluoride rinse program and makes sure that all the grades participate in the school brushing program. This active school preventive program may be why the 13-year-olds compare more favourably to the other reserves than the six year olds in that community.¹

F. Exposure to Fluoride

Only 24% of the 13-year-old children participate in a fluoride rinse program. The range in the number of years the children had participated was between one and five years, with a mean value of 3.81 years (s.d. of 1.42 years). There were considerable differences between reserves in the proportion of children participating in the program. The children on two reserves, Pelican Rapids and The Pas, received most of the supplementary fluoride treatment.

The data indicated that none of the children had received optimal exposure to water fluoridation. A varying amount of natural fluoride is found in the water supply on each reserve. Only one reserve, Grand Rapids, is above the minimum level of fluoride which is considered to provide the optimum level of protection against dental caries (0.7 ppm.).

The Pas	0.31 ppm
Pukatawagan	0.12 ppm
Pelican Rapids	0.16 ppm
Easterville	0.30 ppm (Max.)
Grand Rapids	0.80 ppm (on reserve)
Moose Lake	0.15-0.20 ppm

A Chi-Square analysis was also done by reserve depending on their exposure to fluoride. Grand Rapids and the Pelican

Rapids/The Pas reserves were compared to the three other reserves who have a minimal exposure to fluoride. For 13-year-olds the total DMFT was calculated as well as the number of sound teeth. For 6-year-olds the deft and DMFT were combined as were the number of sound deciduous and permanent teeth.

For both age groups there were highly significant differences between the reserves exposed to fluoride (either water or fluoride rinse) and those that were not. For 13-year-olds Chi-Square = 11.27 with a $p < .001$. For 6-year-olds Chi-Square = 43.21 with a $p < .0001$. The differences between Grand Rapids and Pelican Rapids/The Pas were not significant for either age group. These results showed very clearly that both natural fluoride and the fluoride rinse/brushing program are effective in significantly reducing the rate of dental decay. If the two programs were combined, the results would be even more dramatic.

Discussion

The high rates of decay, particularly in deciduous teeth have resulted in a fairly high number of unerupted, impacted or congenitally missing teeth in the 13-year-old group, especially for second premolars (16.66%), first premolars (4.63%) and maxillary canines (3.73%). The number of "missing" second molars, however, is very small, possibly indicating an early eruption pattern in this population.⁸ The mean number of "missing" teeth in was 0.77.

It was concluded that without x-rays there was no accurate means of telling whether a tooth was unerupted, impacted, or congenitally missing. It was assumed they were all unerupted or impacted, and that these teeth were unable to erupt due to a lack of space. The children who are "missing" canines, first, or second premolars, showed crowding and occlusion problems.

The mean number of missing teeth in the Manitoba rural sample was 0.34.⁴ If the mean number of "missing" teeth in the SCTC population is added to the mean number of teeth missing due to caries in Table 4 (0.26), there is a total of 1.03 missing teeth per child. There are, therefore, three times as many missing permanent teeth in the SCTC population as in the general rural Manitoba population of 13-year-olds.

This result tends to be confirmed by the fact that many deciduous teeth are extracted, resulting in space loss in the mixed and permanent dentitions, so that certain permanent teeth (canines and premolars) become impacted. If only the incisors and second molars are considered to be "missing", the mean per child is only 0.24 unerupted teeth plus 0.26 teeth missing due to caries = 0.50, which is still well above the mean for Manitoba rural children.

A reasonably high overall proportion (67%), have some crowding of the dentition, and only 60% of the children have a normal Class I molar relationship.

The relatively high proportion of children (25%) with a Class II molar relationship may be the result of premature loss of the maxillary deciduous molars resulting in a loss of maxillary arch length. Many of these children also have an increased overjet and overbite.

The number of children with a Class III molar relationship (16%) may be the result of premature loss of mandibular deciduous molars. These children also have a decreased overjet and an increased overbite.

In regard to the prevalence of Class II and Class III malocclusions, it was strongly believed that a large percentage of these are due to space loss as a result of premature extraction of the deciduous molars rather than due to skeletal abnormalities.^{1,6,7} There is no way of verifying this, as studies on occlusion in Manitoba have included a cross section of all Manitoba children, and not specifically Manitoba Native children.

Conclusions

The 13-year-olds in this population compare favourably with rural Manitoba children in 1976. They have fewer decayed teeth needing treatment, and the restorations required are primarily one- and two-surface fillings. The average DMFT is slightly lower, with the number of untreated teeth slightly more than half that of the 1976 sample of rural Manitoba children, but the average number of restorations per child is higher.

The percentage of children who have lesions causing, or likely to cause, pain is almost three times as high as Manitoba rural children. Many of the one- and two-surface restorations required, therefore, end up being two- and three-surface restorations. Also, the DMFT for the SCTC population is very high compared to more recent surveys of urban children in Canada, where the average DMFT was found to be less than 1.0.⁹ They, therefore, lag several years behind 13-year-olds in urban areas of Canada in terms of receiving adequate dental care.

The number of unerupted or impacted permanent teeth, particularly canines and premolars, caused by the premature extraction of deciduous teeth, may be the primary cause of the crowding and occlusion problems.

In the 6-year-old group, the average number of decayed teeth requiring treatment is considerably higher than in the 1976 sample, particularly for teeth needing extensive treatment (crown, pulpotomy, etc.), while it is lower for teeth requiring simple one-surface restorations. The 6-year-olds have a much higher deft rate than rural Manitoba 5-year-olds. Although the "d" component is smaller in the d/def ratio, the proportion of extensive restorations and extractions required is much greater, indicating that these children do not receive treatment until the teeth have been severely damaged.

The following recommendations were made to the Swampy Cree Tribal Council as a result of this survey:

1. That an initial screening and examination of all children in each school should be done to establish the children

with the greatest need. This information is to be used for six- and thirteen-year-olds as a result of this survey, and that clinics should be held continuously on each reserve in turn until all the children are completed. This system, comparable to the Manitoba Children's Dental Program which employs a supervising dentist, plus teams consisting of a dental therapist and assistant, has proven very effective in reducing the treatment needs of Manitoba children over the last 13 years.

2. That emergency treatment be provided for those children experiencing pain or with severe lesions likely to cause pain in the future, primarily in Easterville and Pukatawagan. In addition to the one dentist and assistant presently employed by SCTC, an additional provider and assistant may be required to meet this need.
3. That the school board be encouraged to prohibit the sale of candy and other "junk food" in the schools.
4. That the time spent on preventive treatment (oral hygiene instruction and scaling) be increased, particularly for the reserves in greatest need, Easterville and Pukatawagan. In addition to the one dentist and assistant presently employed by SCTC, a second team consisting of a Dental Therapist/Hygienist and a Phase II Dental Assistant may be required to meet this need.
5. That the effort to have optimally fluoridated water on all reserves continue to be a priority, either in the communal water supply, if present, or the school water supply. As well the school nutritionist, public health nurse (if available), or teachers in each community, should be encouraged to promote brushing in school and the fluoride rinse program.
6. That the level of dental care of children on SCTC reserves continue to be monitored. A follow up study should be considered, perhaps including nine-year-olds and seventeen-year-olds, so that further comparisons can be made with Manitoba rural and urban children. ■

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Sweeteners and Cariogenicity

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Historically, the preference for sweets goes back to the time of the cave dwellers, who drew pictures of figs, dates and other delectables on cave walls. This preference was important from a survival standpoint because sweet foods were generally non-toxic. However, over the years, with the refining of sugar, we began consuming more sugar in more foods than ever before. Today, the average Canadian eats in excess of 45 kilograms of sugar annually.

There are two major categories of sweeteners: nutritive and non-nutritive. Nutritive sweeteners, such as sugar, sugar alcohols, and aspartame, are metabolized and provide calories. Non-nutritive sweeteners, such as saccharin and cyclamates, are not metabolized and do not provide calories.

Sugar

"Sugar" refers to a family of compounds, not all of which are sweet. Sugars include sucrose, glucose, fructose and lactose. The relationship between sugar and plaque formation is well established. The primary cause of caries is acid formation resulting from the metabolism of mono- and disaccharides by plaque, with sucrose being the most cariogenic sugar.

Sugar alcohols

The sugar alcohols, sorbitol, mannitol and xylitol, although they are technically sugars, are used as sugar substitutes. They provide 4 calories per gram, just like sugars, but they are metabolized more slowly by the body, and not readily metabolized by oral microflora. They are used in foods as bulking agents as well as sweeteners. Sugar alcohols do not promote caries. Xylitol may even prevent caries formation.¹ However, in large amounts, the sugar alcohols may cause osmotic diarrhea.

Saccharin

Saccharin, discovered in 1879, was the first non-nutritive sweetener. Manufactured from a petroleum by-product, saccharin is 300 times sweeter than sucrose, and tends to leave a bitter metallic aftertaste. It is not metabolized and provides no calories. There has been much controversy regarding its safety for human consumption. In the 1970s, extensive testing, in Canada, by the Canadian Health Protection Branch (HPB) and in several other countries indicated that saccharin caused bladder tumours in test animals. The HPB decided that although saccharin was useful as a dietary aid, its use as a food additive could not be condoned. Therefore, the sale in

Canada, of foods containing saccharin, was prohibited in June, 1978. However, for those (such as persons with diabetes) who required access to an artificial sweetener, saccharin was made available as a table-top sweetener sold only in pharmacies. In addition, saccharin products must have a label statement advising pregnant women to use the sweetener only on the advice of a physician. Saccharin is not fermented by oral microflora, therefore, it does not promote tooth decay.

Cyclamates



*L to R: Dr. Cathy Kapica, Dr. Jon Suzuki, Elizabeth Snell.
Missing from picture Susan Goodman.*

Another group of non-nutritive sweeteners, cyclamates, were discovered in 1937. These are 30 times sweeter than sucrose. Cyclamates dominated the sweetener market in the 1950s and 1960s, but were withdrawn from the market in 1969 because of studies suggesting cyclamates were potential carcinogens. On the basis of subsequent data, the HPB concluded that cyclamates are probably not carcinogenic, but are associated with testicular atrophy in experimental animals. Therefore, since June 1978, cyclamate availability is restricted to use as a table-top sweetener, only on the advice of a physician, and as a sweetening agent in drugs. Cyclamates are, therefore, sold in food stores and distributed to the public in food-service establishments as a table-top sweetener. However, cyclamates are not permitted for use in foods in Canada. Cyclamates are not metabolized by plaque-forming oral organisms, so they do not promote caries formation.

Aspartame

The most widely used sugar substitute in this country today is aspartame, which was discovered in 1965. Aspartame is a nutritive sweetener, composed of two amino acids, aspartic acid and phenylalanine as the methyl ester. It is 200 times sweeter than sucrose, so even though aspartame provides 4 calories per gram as other proteins do, its intense sweetness means less of it is used, resulting in a caloric savings. Aspartame was studied extensively before being approved by the HPB for use in Canada in July 1981. When the HPB received the data on the safety of aspartame, they stated that it was "the most comprehensive data ever received in support of a food additive".² Aspartame is also approved for use in the United States, by the World Health Organization, the European Economic Community, and the regulatory agencies of more than 90 countries around the world. Aspartame studies with humans are numerous, including its use with children,³ persons with diabetes,⁴ those on weight loss regimens,⁵ lactating women,⁶ those complaining of headaches,⁷ women of child bearing age,⁸ and long-term use at high levels of intake.⁹ In all cases, aspartame was safe and did not cause any side effects. Aspartame is safe for use by the general population, including pregnant women and children.¹⁰ The only group that may need to restrict aspartame consumption are those persons with phenylketonuria (PKU) who must monitor their intake of phenylalanine.

In Canada, aspartame is used in table-top sweeteners, breakfast cereals, carbonated soft drinks, powdered soft drinks, milk-based flavoured drinks and shakes, frozen desserts and novelties, puddings, gelatin, topping mixes, pies, yogurt, chewing gum, hard candies and breath mints, children's multi-vitamins, cold medications and wine coolers. Even though aspartame is available in a wide variety of products, a recent study shows that actual Canadian consumption of aspartame by individuals is low.¹¹ Because of its intense sweetness, very little aspartame is needed to sweeten foods and beverages, thereby contributing minimal amounts of aspartame to dietary intake.

Aspartame has many advantages as a sweetener. It tastes like sugar yet has no bitter aftertaste. It is a flavour enhancer, especially with fruit flavours. And since it is not a carbohydrate, it does not promote dental caries. Aspartame cannot be utilized as fermentable substrate for *Streptococcus mutans* metabolism during plaque formation because it is a dipeptide. Therefore, lactic acid production is minimal, and the subsequent drop in plaque pH observed after sucrose metabolism is not observed after aspartame consumption.¹² Studies which examined aspartame's dipeptide nature to determine whether, like protein, aspartame could be utilized as a nitrogen source for acidogenic oral micro-organisms yielded negative results.¹³

Numerous studies support the non-cariogenic property of aspartame. In addition, some research indicates that aspartame retards or inhibits dental plaque formation. Reports using

combinations of sucrose with aspartame, sucrose with saccharin and sucrose with cyclamates confirm these findings.¹⁴ In vitro, aspartame reduced adherent plaque formation, while cyclamates and saccharin did not. Several explanations for the observed decrease were suggested, including the ability of *S. mutans* or glucan to adhere, or possibly the effect of aspartame on the extracellular enzymes.

Acid production by plaque was studied in the presence of human whole saliva.¹⁵ A decrease in pH of dental plaque in the presence of sucrose and aspartame was inhibited. This was concomitant with an increase in lactic acid production. Thus, although an aspartame/sucrose combination enhanced lactic acid production, pH was not lowered. Sucrose alone enhanced acid production as well as lowering the pH.

Animal studies were conducted to test aspartame's role in the prevention of dental decay. One study compared the addition of aspartame and saccharin to a basal cariogenic diet (similar to a Canadian diet).¹⁶ The addition of aspartame resulted in significant dose-related decreases in buccal and occlusal caries. Saccharin addition showed a significant decrease in occlusal dental caries but not buccal dental caries. In a later study, aspartame was found to be effective in reducing acid-induced tooth enamel demineralization rates, while saccharin was not.¹⁷ Aspartame's effect on tooth decay was studied using various concentrations of sucrose, aspartame, and sucrose/aspartame combinations in rats on a basic diet.¹⁸ When compared to the 30 percent sucrose group, the sucrose/aspartame combination group showed a sharp reduction in caries scores suggesting that aspartame can reduce the cariogenic potential of sucrose. Aspartame alone, when fed in concentrations to achieve a sweetness equivalent of 30-60 percent sucrose, did not promote tooth decay.

Conclusion

Sugar substitutes such as saccharin, cyclamates and aspartame are acceptable replacements for caries-causing carbohydrate sweeteners in foods and beverages. In particular, aspartame has many advantages: it is widely available; safe; and has a clean sweet taste.

As dental professionals, it is our responsibility to be able to provide constructive, effective nutritional counselling. Keeping current on the means to provide our clients with the sweet taste they want without the cariogenicity will help them attain and maintain healthy teeth. ■

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15 Years of a Comprehensive Children's Dental Program in Manitoba

By: Rhonda L. Plett, DN, RDH
Dental Health Educator,
Dental Health Branch,
Manitoba Health



As a regular reader of the Probe, who enjoys reading and learning about non-traditional practice settings for dental professionals, I have wanted to share my experience in the Children's Dental Program (CDP) for some time. With 1991 being the 15th year of CDP operation, this is an opportune time to review the history, evolution, and current status of this valuable public health program.

Historical Background

In the early 1970s, province-wide dental surveys^{1,2} were conducted to determine the dental status of Manitoba children. Results indicated a definite need for dental treatment, and increased prevention and education services. Based on these results, a decision was made by government, to introduce a universal, comprehensive children's dental program modelled after New Zealand's program which utilized dental nurses.

The first step toward implementation of this program involved the recruitment and training dental nurse students. Students were to be trained in Regina, Saskatchewan, in the dental nursing program, already in operation at Wascana Institute of Applied Arts and Sciences.

Evolution

The first graduating class of 5 students were all Manitoba hygienists, and because of their dental hygiene education, all were able to complete the 20-month course in 10 months. In September of 1976, the 5 dental hygienist/nurses began treating six-year-old children in selected rural and northern elementary school dental clinics.

By September of 1977, 15 dental nurses and 5 dental hygienist/nurses were providing treatment of six- and seven-year-olds across the rural and northern areas of the province.

In 1978, a change in government effected a change in the delivery of CDP. In larger rural centres where private dental offices existed, the restorative treatment component of the program was shifted to the private dental office.



Rhonda Plett

In these areas, the school clinics were dismantled, and dental nurses were transferred. All geographic expansion of the program was halted. Not until 1984 were remaining rural areas included in the program; and to date, services are NOT provided in the cities of Brandon and Winnipeg.

Current Status

Under the Dental Health Workers' Act, 24 dental nurses and their assistants who are employed by the government provide restorative and preventive treatment under the direction of licensed dentists. The dental nurses perform the following services without direct supervision:

- 1) examination of patients and recording of health data
- 2) exposing and developing of dental radiographs
- 3) application and removal of rubber dam
- 4) intra-oral administration of local anaesthetic
- 5) topical application of medicaments
- 6) administration of first-aid and handling of general dental emergencies
- 7) patient, classroom, and community education in oral health
- 8) dental prophylaxis and scaling
- 9) topical application of anti-cariogenic agents
- 10) application of pit and fissure sealants
- 11) oral hygiene evaluation (gingival indices and plaque indices)
- 12) placement of temporary restoration
- 13) finishing and polishing of dental restorations
- 14) indirect pulp capping
- 15) preparing for and placing of permanent restorations in primary and permanent teeth (including crowns on primary teeth)
- 16) pulpotomy of primary teeth
- 17) pulp capping of permanent teeth
- 18) surgical removal of deciduous teeth

Each dental nurse/dental assistant team currently has a patient load of approximately 1,000 children ages 6-14, as compared to patient load of 200 in 1976. This great increase in numbers is due to the improvement in the oral health of children since the inception of the program.

The teams are based in rural communities and generally provide service to other communities within a 60-mile radius.

for remote northern locales, teams and equipment are flown in at intervals throughout the year. All equipment is portable and the team transfers it with relative ease. The movement of teams, combined with reasonable supervision requirements, facilitate access to dental care for the children of Manitoba, regardless of geographic isolation.

Although restorative services are considered vital, the teams have always provided preventive programs in schools, and education programs in the communities where they live and work. Preventive programs in schools include classroom dental education, weekly fluoride rinses, and daily classroom brushing for over 70,000 school children.

Community education target groups include pre-natal classes, pre-schoolers, parents, public health nurses, health fair participants, senior citizens, staff in personal care homes, and community health workers.

From a personal perspective, I consider myself very fortunate to have been involved in such a successful program for 12 years. I have had the opportunity to work with many dedicated dental public health professionals, various cultural groups from all regions of Manitoba, school teachers, parents, other health professionals and, most importantly, with children. It has been most rewarding to observe the high standard of dentistry provided by dental nurses^{3,4} and to see definite improvements in oral health and in attitudes toward dental care.

Since 1981, I have held the position of Dental Health Educator, which has removed me from regular clinical duties. This allows me to serve as a consultant to teachers, health professionals, faculties of education, and health education groups across the province and country. With health care dollars rapidly decreasing, it is important that we, as dental health professionals, consult and collaborate with groups who may influence the achievement of health for all Canadians. This approach has been successful in Manitoba, and is expected to continue in the future of the Children's Dental Program. ■

References

- 1) *Province of Manitoba, Department of Health and Social Development, Division of Research, Planning and Program Development; Report of the Manitoba Committee on Children's Dental Health Care. December 1973, Dr. Olva Odum - Project Chairperson.*
- 2) *Dental Health Services, Department of Health and Community Services, Province of Manitoba: Dental Health Survey of Manitoba Children 1976. Dr. James Leake*
- 3) *A Quality Evaluation of Specific Dental Services Provided By The Saskatchewan Dental Plan - Final Report 1976: Dr. E.R. Ambrose, Dr. W.J. Simpson, Dr. A.B. Hord*
- 4) *Children's Dental Health Program. Review Committee - Final Report, June 1981, Dr. A. T. Storey, Committee Chairperson*



Dental Nurse/Assistant Teams provide treatment in school-based clinics

Antibiotic/Antimicrobial Use in Dental Practice

*Edited by Michael Newman & Kenneth Kornman;
Second edition; Quintessence Publishing Co., Inc.
Chicago, Illinois. Copyright 1990. Illustrated,
240 pages, \$30.00.
ISBN: 0-86715-172-2.*

*Reviewed by Hans R. Preus,
Assistant Professor, PhD, DDS,
Dpt of Oral Biology, SUNY at Buffalo.*

Of late there has been an increase in interest for the use of antibiotics in dental clinics. This book is, therefore, a timely revision of the first edition (*Guide to Antibiotic Use in Dental Practice*) published 6 years ago. The editors have invited a group of internationally-recognized experts to review the pertinent information in their respective fields of dentistry.

The chapters are extremely well organized and easy-to-read, which is an accomplishment when so many different scientists and clinicians contribute together. Figures and tables substantiate, providing a good overview of the information in the text.

The book is divided into 5 parts. Part 1 reviews general principles for management of infectious diseases in the orofacial area, emphasizing the plaque-associated conditions. The authors have been crucial without being extensive. Part 2 reviews antimicrobial susceptibility, sampling and analysis for microbial culturing, individual drugs, topical antimicrobial agents, as well as antifungal and antiviral agents. The authors caution the use of antimicrobial agents and the need for microbial diagnosis prior to antimicrobial therapy. The only thing missing in this section, is the fact that development and transmittance of bacterial resistance is not only a patient problem, but also a population and environmental problem, which presents the additional obligation of care in the prescription of antibiotics. The chapter on topical antibiotics is timely as the next two to three years will see these substances marketed on a broad scale. Due to the potential boom in local delivery this chapter could have been further amplified. Part 3 elegantly and fully reviews adverse- and side-effects from the use of antibiotics, while Part 4 reviews extensively, the clinical applications of these drugs in the dental practice. Again, the authors emphasize the care with which antimicrobials should be employed, the need for microbiological diagnosis, and the fact that antibiotics should be considered as adjunctive therapy when conventional therapy fails. Part 5 gives a review of the prophylactic use of antimicrobials, use of antimicrobials in the immunocompromized patient, pregnancy, etc. Legal considerations are also included. The book ends with 27 appendices containing differing antimicrobial regimes in various clinical situations and also listing indications of use as well as drug interactions and patient-risk groups.

Altogether, this is a book that every clinician should have. It is updated, easy to consult, and interesting to read. It is also quite suitable for students in the dental field. Although brief, with minimal pharmacology and kinetics, it contains the necessary information, presented in a systematic and easy-to-read manner. ■

Bench-Top Orthodontics.

*Harvey W. Lawson, AAA, CDT & Joan L. Blazucki, RG,
BS. 1st ed. Quintessence Publishing Co., Chicago,
Illinois. Copyright 1990. Illustrated, 140 pages,
\$38.00. ISBN: 0-86715-233-8*

*Reviewed by Patricia Fortier RDH,
Orthodontic Dental Hygienist,
Niagra Falls, Ontario.*

As William Davidson, the chairman of the department of orthodontics at the University of Maryland, states in the forward to *Bench-Top Orthodontics*, until this publication there has been no single source to facilitate dental students learning orthodontic techniques. Thus such a publication could be not only timely, but eagerly sought by instructors, dental students, technicians and auxiliaries alike.

The authors, themselves educators, intended to design a manual that would assist in the construction of the most commonly prescribed fixed and removable orthodontic appliances. Its intent is not to give detailed explanations of the function of each appliance. This manual is meant to be used as an adjunct to classroom lecture.

Coil bound, to lie flat or be quickly folded to save space, and soft covered, with ample space allowed for personal notes on every page, the manual lends itself easily to direct laboratory use.

The material is presented with sequential photographs of actual appliance fabrication accompanied by a minimum of text. The photographs are black and white. Would colour be better? I think not. These photos are quite clear and close-up. Colour would no doubt increase the final cost and students may appreciate this cost savings, I'm sure.

The authors take us, step-by-step, through the details of fabricating one appliance after another: the Hawley Retainer, Bruxism Appliances, Fixed Space Maintainers, Nance Holding Arch Appliances, to name a few. After following through and appreciating this systematic, thorough approach, Chapter 19 - Additional Appliance Examples, is a distinct disappointment. The authors seemed to have rushed the end of their work. In place of the details of fabrication found previously, we find one-paragraph descriptions of numerous appliances, each with a corresponding photo of the finished product. The Bionator and the Frankel Appliances are two of the more complex and commonly used appliances, from this group. I feel they should have been treated as thoroughly as had the appliances up to that point.

At the beginning of the manual some relatively basic information about occlusion, dental laboratory prescription forms, has been included. The body of the manual is followed by a handy, relevant Glossary of Terms. All these serve as an excellent guide to the beginner and would provide a succinct review and reinforcement for those who are experienced.

In summary the purchase of *Bench-Top Orthodontics* would be of considerable practical benefit to dental personnel responsible for the fabrication of orthodontic appliances. Students, in particular, who use this "recipe book" will no longer have to imagine how their projects should look at any given point, nor will they have to guess at the sequence of steps required to achieve a clinically acceptable appliance. For these reasons, and these people, this manual receives my whole-hearted recommendation. ■

Contemporary Periodontics

Robert J. Genco, Henry M. Goldman & D. Walter Cohen. 1st ed. The C.V. Mosby Company, 11830 Westline Industrial Drive, St. Louis, Missouri, 63146, copyright 1990. 1232 illustrations, indexed, 729 pages, \$70.00

Reviewed by Carol M. Barr Overholt RDH, part-time faculty Niagara College of AA&T, employed in private periodontal practice, St. Catharines, Ont.

For many dental professionals the authors' names are synonymous with periodontology and the list of contributors reads like a Who's Who of dental education and research.

The precursor of this text is the 1959 Goldman/Cohen edition of Periodontal Therapy. With reorganization and current advances included, the present text is grouped into four parts, or broad areas of study, composing 58 chapters. Each chapter is written by one or more leading experts on the subject, including the authors.

Virtually every fact of periodontology is addressed within this edition. The first three parts place a strong emphasis on current concepts, technologies, and procedures applied to periodontal disease and their uses in clinical practice. Part IV of the text is concerned with future directions that periodontal disease therapy may take, along with controversial consideration. In a clear and concise manner relevant subjects are thoroughly discussed and are supported by well-documented references. The topics proceed logically beginning with the nature of periodontal tissue, through to prevention and treatment, concluding with the controversy surrounding disease therapies.

Considering that this text carries a publication date of 1990, it is reassuring to see that chapters include information on AIDS, host immune response, prophylactic antibiotics, infection control, hepatitis, and social and population changes along with their implications.

Some highlights include excellent chapters on dental implants and their maintenance, anti-infective therapy, regenerative periodontal therapy, medical and dental history taking, sex hormonal imbalances and their oral manifestations, medications used for tooth sensitivity and the future of radiographic and resonance imaging.

Though well written, many chapters are highly scientific and the comprehension level may prove too advanced for the undergraduate dental hygiene student. For those with a limited microbiology/history background, the scientific jargon becomes clearly challenging in the chapters headlined Epidemiology of Periodontal Disease,

The Periodontal Attachment Apparatus and Microbiological Diagnosis of Periodontal Disease, for example.

Conversely, the chapters on Instrumentation: Selection and Care, Preventing Periodontal Disease, and Scaling and Root Planing are disappointing in their lack of new information. Considering that the contributors to these chapters included dental hygienists I had hoped for some innovative advances. Subjects like instrument grasp, operator positioning, tray set-up, and sequence of therapy are well-covered in current dental hygiene texts. Therefore these chapters could only serve as a review for the graduate dental hygienist.

Of the 1232 illustrations, two are colourplates. The tables and drawings are generally very well done; however, some radiographic slides and histologic section photos are difficult to interpret due to their lack of contrast, small size, poor focus or overall darkness.

The preface to this book indicates that this edition is suited to dental students, dentists and residents but I would suggest that it might also benefit graduate dental hygiene students.

Many of the chapters are so scientific that I would question the book's usefulness as a required text for undergraduate dental hygiene education. I would, however, highly recommend its inclusion in the library as a reference for students and faculty alike. If the graduate dental hygienist or post-diploma student seeks a comprehensive state-of-the-art text for either personal reference or addressing patient inquiries, this is the one.

In closing, I commend the authors on their research, organization, compilation and editing of this text. It could very well become the definitive volume on periodontology. ■

The Terry Fox Run

Sunday, September 15, 1991



—Part two of a series—

Life Insurance

Life insurance, although regarded by many Canadians to be of minor importance in their overall personal financial portfolio, is one of the fundamental ingredients, in fact, for a sound, secure, and diversified personal financial plan.

The question for many Canadians is how to identify if and when they need a personal life insurance policy. While it is outside the scope of this article to advise individuals what and which policies they should purchase, it is safe to say that the following provides a set of guidelines to facilitate the decision-making process.

You need life insurance if:

1. Someone depends on all, or part, of your income for basic essential needs.
2. You personally own assets that may be subject to taxation upon your death (i.e. capital gains, tax on real estate, and other related investments).
3. You own RRSPs that will be taxed upon your death.
4. You feel comfortable with the concept of being able to accumulate cash in a tax-sheltered vehicle.
5. You like the idea of being able to create an estate with discounted tax consequences.

Some of the basic and fundamental reasons to purchase a personal life insurance policy are:

1. Life insurance is a method of being able to place or create cash that accumulates over time, without having to pay tax on it at any time.
2. The ultimate in deflation takes place at the time of death of the bread winner. Coincidentally, the ultimate in inflation of a life insurance policy takes place at the same time.
3. Life insurance can be used as protection against creditors if one dies prematurely (i.e. mortgage, accrued and unpaid capital gains investments).

Life insurance is basically a financial instrument which provides "peace of mind". However, it is a product whose need is primarily based on one's financial and family situation.

Purchasing life insurance cost-effectively, like almost any other form of insurance, requires effective purchasing power, good negotiations with the underwriter and a constant monitoring of premium and claims data by trained professionals. Our Association, being predominantly female with relatively low average age, presents an extraordinary opportunity for members to secure significant volumes of life insurance at extraordinarily low costs. The Association has negotiated coverage which would provide up to \$1,000,000 of life insurance benefit for members of the Association and their spouses. These rates are the lowest available in the industry and are available to our members with proof of membership.

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For further information please contact the CFDE office, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6, or call 613-731-0493.

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Self-Assessment Test

Root Caries

The population requiring dental services is changing toward a higher percentage of older adults, many of whom will be at risk for root caries. Dental hygienists have an obligation to monitor the patient susceptibility to root surface caries. Dental hygiene care must include those services aimed at the treatment and prevention of root caries.

- The microflora most implicated in root surface caries are:
 - Streptococcus mutans
 - Actinomyces viscosus
 - Actinomyces naeslundii
 - Streptococcus salivarius
 - a, b and d
 - a, b and c
- The prevalence of root caries in lifelong residents of fluoridated communities is significantly reduced as compared to residents of a non-fluoridated community.

True False

- The attack **rate** for maxillary teeth is found to be twice as high as the rate for mandibular teeth.

True False

- Patients with a history of root caries are at a greater risk of developing new lesions than those without such previous experience.

True False

- Predisposing factors for root caries include:
 - recession
 - xerostomia
 - age
 - manual dexterity
 - periodontal disease
 - all of the above
 - a, b and d
 - a, b, d and e

- Root caries may exhibit
 - a darkened discoloured appearance or
 - a tacky leathery feel upon moderate probing.

Which of these (a, b or both) indicate(s) an **active** lesion?

- Typically, root caries:
 - extends 1/2 to 1 mm. in depth
 - tends to spread laterally
 - seldom spreads apically
 - shows an "attack pattern"
 - all of the above
- A thorough charting on an adult patient should differentiate between root caries, _____, _____ and _____.
- The preferred treatment for **early** lesions is _____.

- The hygienists' role in the treatment and prevention of root caries includes:

- detecting and recording
- home care instruction
- scaling and root planing
- topical fluoride application
- diet counselling
- determining recall frequency
- all of the above

Prepared By: T.L. Mitchell, RDH,
BSc, MEd
M.E. Kinnear, RDH
School of Dental
Hygiene
Dalhousie University
Halifax, Nova Scotia

Self-Test Answers

- F
- TRUE
- TRUE
- FALSE
- G
- B
- E
- Abrasion, Erosion, Absorption
- Root Planing and Fluoride
- G

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Saturday, August 24
9:00 - 12:00 and 13:30 - 16:30

Gordon Christensen*, DDS, MSD, PhD
Restorative Dentistry

Sunday, August 25
9:00 - 12:00 and 13:30 - 16:30

Imtiaz Manji, BSc and Tom Snyder, DMD, MBA
Practice Management

MONDAY, AUGUST 26

AM 8:30 - 11:00

Dennis Smith*	Biomaterials & Biocompatibility
Léo Pelletier	La Classification des Maladies Périodontales
Kenneth Shay	Guidelines for Restoring the Aged Dentition
John Young	Dental Office Lighting and Design
Anita Jupp	Practice Management - Ingredients for Success

PM 13:30 - 16:00

Robert Samp*	Stress: Living In, With and In Spite of It
Kenneth Shay	Dental Management of the Frail Elder
John Young	Ergonomics and Asepsis
Gérard Bouger	Le marketing au service du cabinet dentaire
Olga Skica &	Periodontics into the 90's: Regeneration of the Lost Attachment Apparatus
Lorne Wiseman	Medical Considerations for the Female Patient: From Puberty to Menopause
Barbara Steinberg	

TUESDAY, AUGUST 27

AM 10:00 - 12:00

Sebastian Ciano*	Periochemotherapeutics
Barbara Steinberg	A Team Approach to Treating the Dental Patient with Medical Problems
Joanne Lamantia	Computers in the Dental Practice
Université Laval	Recherches
Mark Sarner	New and Improved: The Canadian Dental Consumer in the 1990's
Robert Samp	Survival Strategies for Today's People
Dennis Smith	Update on Bonding and Cements

PM 14:00 - 16:30

Sol Silverman*	Update on AIDS, HIV Infection and Dentistry
Charles Blair	Controlling Practice Overhead
Sebastian Ciano	Dento-therapeutics
Sylvie Morin	La Restauration des Dents Postérieures en Dentisterie Opératoire: Une Revue des Matériaux et Techniques
Table Clinics	
Marilyn Ciano	Leadership and Volunteerism: What Makes it Work?

WEDNESDAY, AUGUST 28 (8:30 - 11:30 ONLY)

Sol Silverman	Update on Oral Cancer & Premalignant Lesions
Charles Blair	Dental Practice Transitions

Hélène Lémay &	Anesthésie locale et électrique
Anne Charbonneau	
Peter Guevera	New Materials & Techniques in Prosthodontics

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Monday, August 26th

7 pm - 1 am

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Full recreation options from hot springs to skiing, fishing and hiking.

Please apply with covering letter, Resume, Hygiene School Grades and High School Grades by August 15, 1991.

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Butler	OBC

Dental Hygienist - Victoria, BC

Full-time position (Mon-Thurs) available in a successful, well-established family practice. If you are interested in working in a team atmosphere with other hygienists, and with a friendly supportive staff this may be the position for you. In August, 1991 our progressive well-organized practice will be moving into a brand new office space. This new office has been 1 year in planning with input from all staff members and meets with the Canadian Whimis and U.S. Osha proposed standards and suggestions. If you are interested in joining our dental team please reply to the address below or you can call collect and speak to Dr. Talarico or Dianne.

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Dr. Talarico Home - (604) 595-1351
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Dental Hygienist

Our practice is in need of the services of a Registered Dental Hygienist.

- If you enjoy working with people
- If you are comfortable helping people understand their dental health issues
- If you would enjoy helping people make decisions about their dental health future

Then we would like to talk to you.

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It is, after all, the single most important feature of any toothbrush.

That's why we've taken such time and care designing ours.

The first thing we did was to use soft nylon bristles.

Which are exceptionally gentle on the gums.

Then we grouped them in our improved bristle layout.

Giving Oral-B an extremely high bristle density, producing effective cleaning.

And thirdly, we gave our bristles the best end-rounding in the business*.

Helping Oral-B to minimize gingival trauma.

Finally, we rounded the corners of our brush head.

Reducing the risk of gum damage and increasing patient comfort.

As you can see, any toothbrush of merit should offer its patients soft, gentle and effective cleaning.

If it doesn't, maybe it should have its head examined.



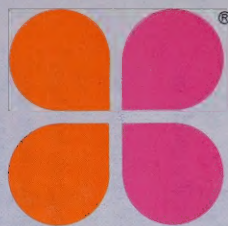
USED AND RECOMMENDED BY
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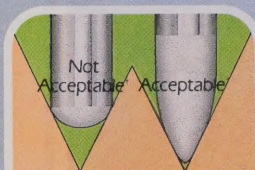
*According to independent research study, Quinrescence International, Vol. 19, Nov. 2/1988. For a copy of this report or for more information please write: ORAL-B LABORATORIES INC., 974 LAKESHORE ROAD EAST, MISSISSAUGA, ONTARIO L5E 1E4.

Butler



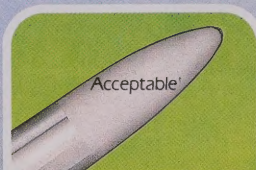
GIVE YOUR PATIENTS THE BUTLER ADVANTAGE

Only Butler toothbrushes provide these 5 features



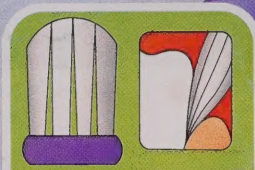
Rounded and Tapered Bristles

Rounded to be gentle, not traumatize gums. Tapered to reach deep into the sulcus and interproximally. Bristle tips are sized down from .004 to .002.



Satinized Bristles

Butler's texturized bristles pick up plaque and carry it away, unlike some smooth, polished bristles that only slide through plaque.



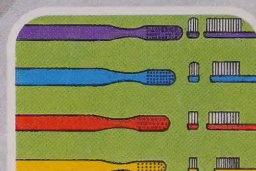
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Exclusive shape prevents bristles from bunching up, allowing a flexible tip to penetrate sulcular areas. The design positions bristles to reach into the sulcus regardless of angle.



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The wide, lever grip straight handle provides better grip for more precise control of brush head making it easy to brush the buccal, lingual, posteriors as well as anteriors. And it won't twist in your hand.



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DENTIST DESIGNED CLINICALLY PROVEN

These exclusive features of the Butler toothbrush provide the basis for its superb clinical performance. Butler toothbrushes are proven in independent studies* to reduce gingivitis and are the overwhelming choice of Periodontists.

Next time you recommend, dispense or use a toothbrush, give your patients and yourself The Butler Advantage.

*Data on file.
†According to Butler Specifications



Butler



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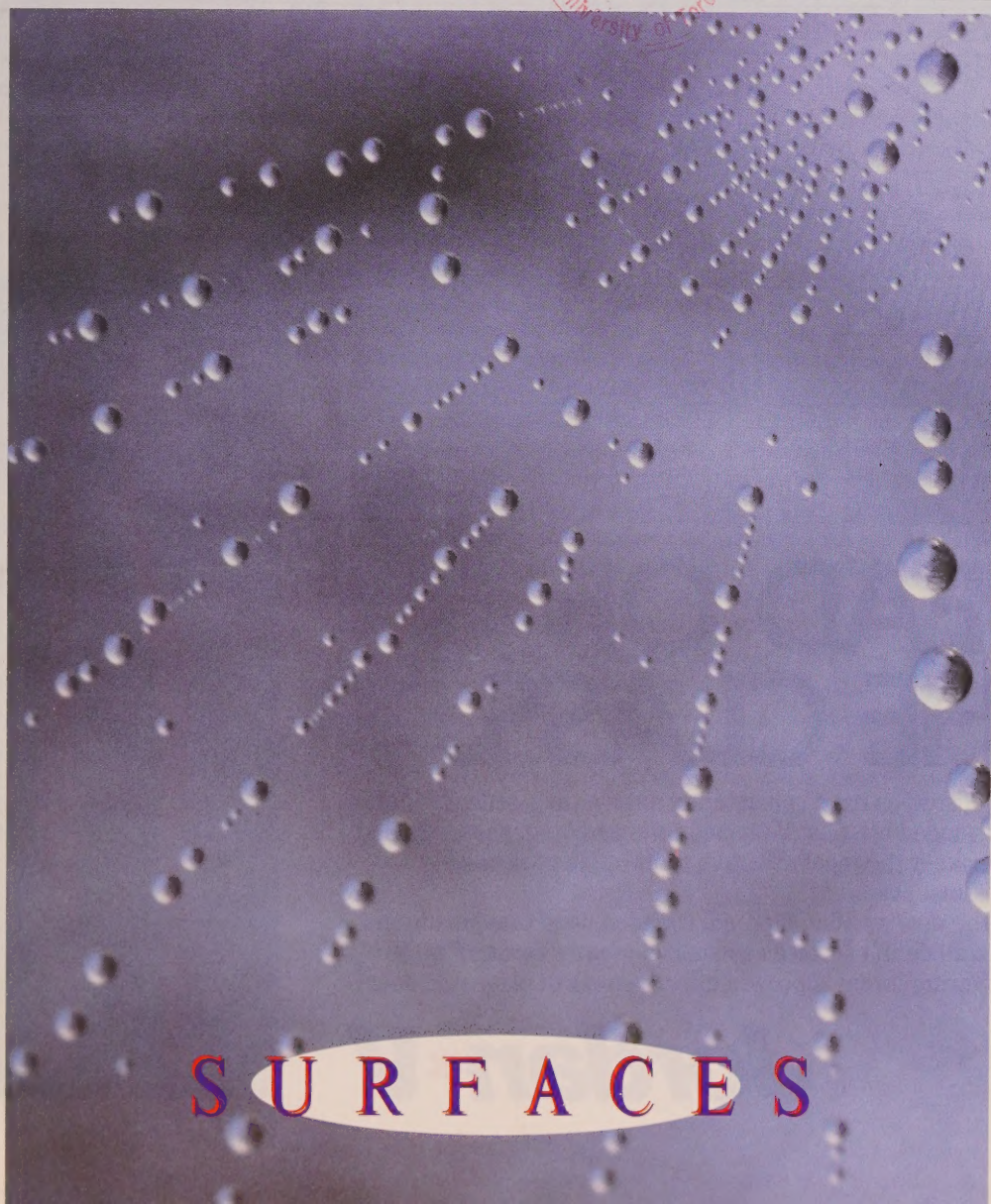
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THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
JOURNAL DE L'ASSOCIATION CANADIENNE
DES HYGIENISTES DENTAIRE

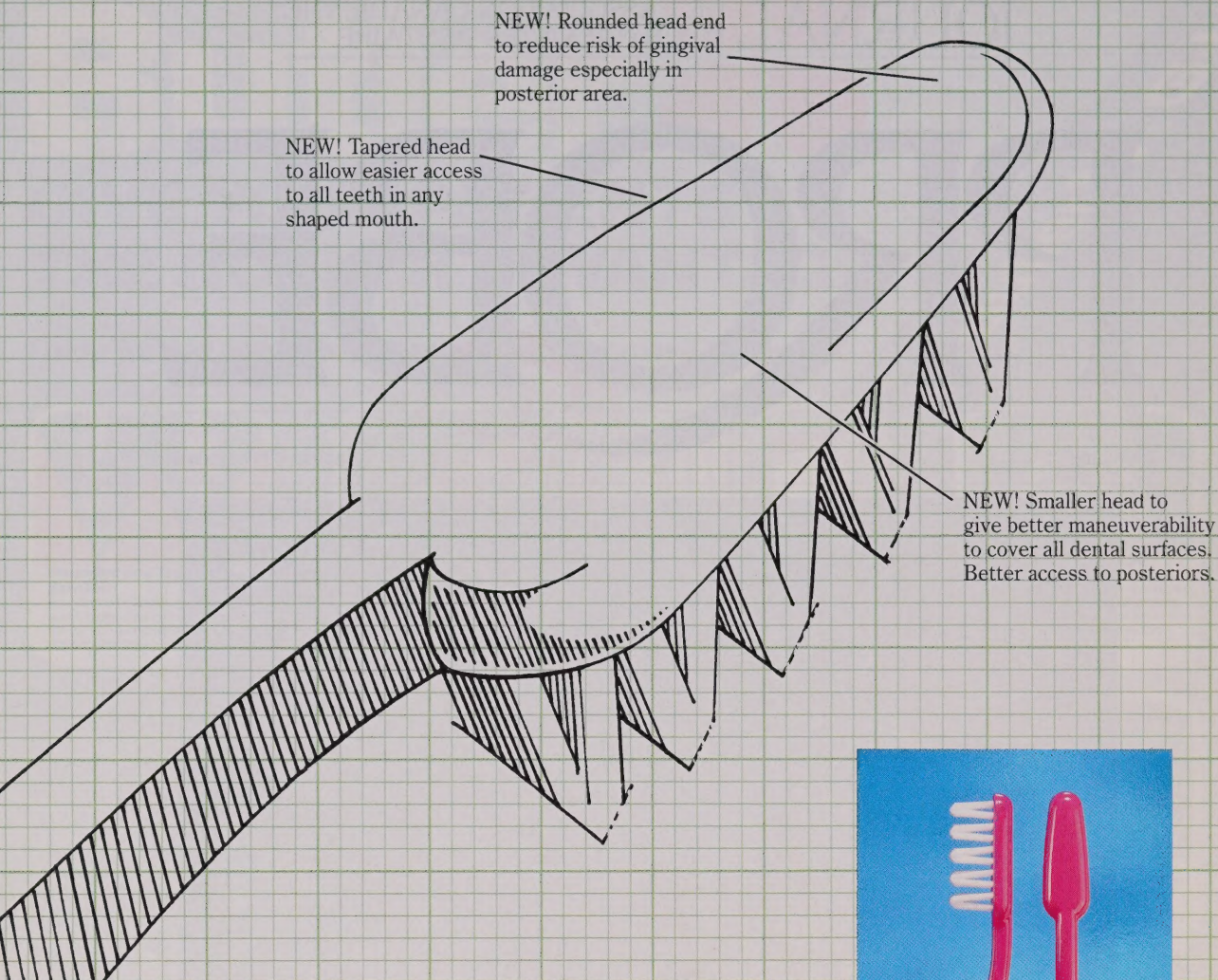
PROBE

volume 25, no. 3

Autumn 1991 automne



SURFACES

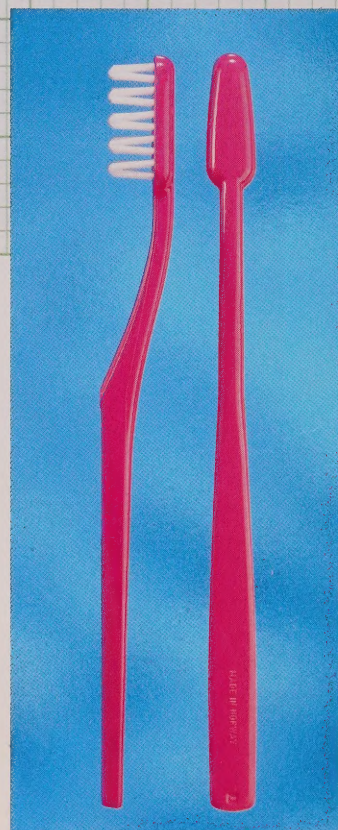


HEAD OF THE CLASS.

Clinical studies have consistently shown that Jordan* V-Tuft's unique rounded bristles, V-shaped tufts and long, spoon shaped handle make it the most effective toothbrush at removing interproximal plaque.

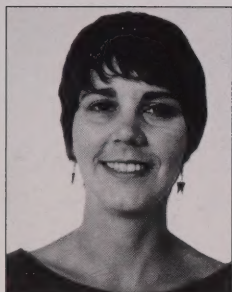
Now the new smaller, tapered, rounded head provides better access to all dental surfaces as well as greater comfort while still delivering Jordan's proven effectiveness in plaque removal.

Jordan*V



HORNER
Montréal, Canada

President's Message



Terry Mitchell of Halifax, Nova Scotia, is CDHA's 29th President. She was sworn in at the annual Board of Directors' Meeting held June 11, in Moncton, New Brunswick. Ms. Mitchell received her Diploma in Dental Hygiene in 1978. She later obtained a BSc in Biology and, in 1989, a Masters of Education. Ms. Mitchell is currently teaching at Dalhousie University and continues to practise as a dental hygienist at CFB Stadacona.

One of the outcomes of the strategy planning undertaken by the Board of Directors in 1989, was the reaffirmation and clarification of the goals of CDHA. Priorities were set, and published in Probe, Vol.23, No.4. As strategy planning is an ongoing process, the Board of Directors will regularly reaffirm our goals. This June, at the Annual Session, the Board of Directors reviewed and reaffirmed the association's goals. The goal "to promote the regulation of Dental Hygienists by the Dental Hygiene Profession", however, moved from priority seven to priority two! I think this

is a sign of the political climate across Canada.

Hygienists involved in all aspects of the dental hygiene profession are meeting with barriers that prevent them from delivering the quality preventive care they are educated to provide. Maybe a dental hygienist sees a need in the community that she or he is willing to and very capable of fulfilling, but is unable to do so because the provincial regulations are prohibitive. The trend in governments is toward more self-care and less institutional care; toward cost-effective programs to promote prevention and healthy lifestyles. Most provincial regulations restrict the ability of dental hygienists to provide their expertise in health promotion and disease prevention. Most provincial regulatory bodies are unreceptive to changes that would allow hygienists to meet the challenges voiced by governments, communities, and the public. For these reasons, more and more dental hygienists are questioning the way in which they are regulated and controlled.

The Canadian Dental Hygienists Association recognizes that regulations fall within provincial jurisdictions. CDHA can help by providing support and expertise to provincial associations as they explore their "windows of opportunity". Canadian dental hygienists are very talented people. We can share our experiences and knowledge to encourage and promote regulation of dental hygienists by dental hygienists.

It is important that our members have a clear understanding of the differences

between self-regulation, independent practice and collaborative practice setting. CDHA's 1990 policy statement states:

"In the best interest of the oral health of the Canadian public, CDHA supports the delivery of care through a collaborative practice model in which the dental hygienist proposes and provides the dental hygiene care component within a comprehensive oral health plan."

Self-regulation does not need to affect how hygienists practise in private practice, but it will impact on such issues as who registers and licences dental hygienists, and who hears discipline cases involving dental hygienists or dental hygiene practices.

For me, this shift in perspective represents the growth of the Dental Hygiene profession in Canada. Dental hygienists are willing to take full responsibility for the care they provide. And why not? Dental hygienists are highly educated (not trained) professionals. They deserve respect and recognition for the role they play in promoting health and providing periodontal treatment. It is highly unlikely that this goal can be achieved when hygienists continue to be regulated by dental boards composed of a majority of dentists with parental attitudes. While retaining family ties, it is high time for Dental Hygiene to have a place of its own. ■

WE KNOW HOW DIFFICULT IT IS TO GET YOUR PATIENTS TO FIGHT PLAQUE.



It's a message that you've been trying to drum into your patients' heads for years: to prevent gum disease it's imperative to brush and floss.  A basic tenet of oral hygiene, right? Logical. Irrefutable.

 Yet some people still don't take a blind bit of notice. You see the signs of their neglect every day.  So what are you to do?  Continue to hammer away at them every six months.  And at the very least, encourage them to use Listerine Antiseptic.  By rinsing with

Listerine for 30 seconds, twice a day, (that's

in addition to their usual oral hygiene), your patients can reduce plaque and gingivitis by as much as 34%^{1,2,3,4} over brushing alone.  Do you still need more proof? Listerine is the leading over-the-counter rinse to have earned the American Dental Association Council on Dental Therapeutics' Seal of Acceptance for proven antiplaque/antigingivitis efficacy.⁵  We're not kidding ourselves. Convincing your patients to fight plaque and gingivitis is clearly an uphill battle. But Listerine may just give them the push they need.

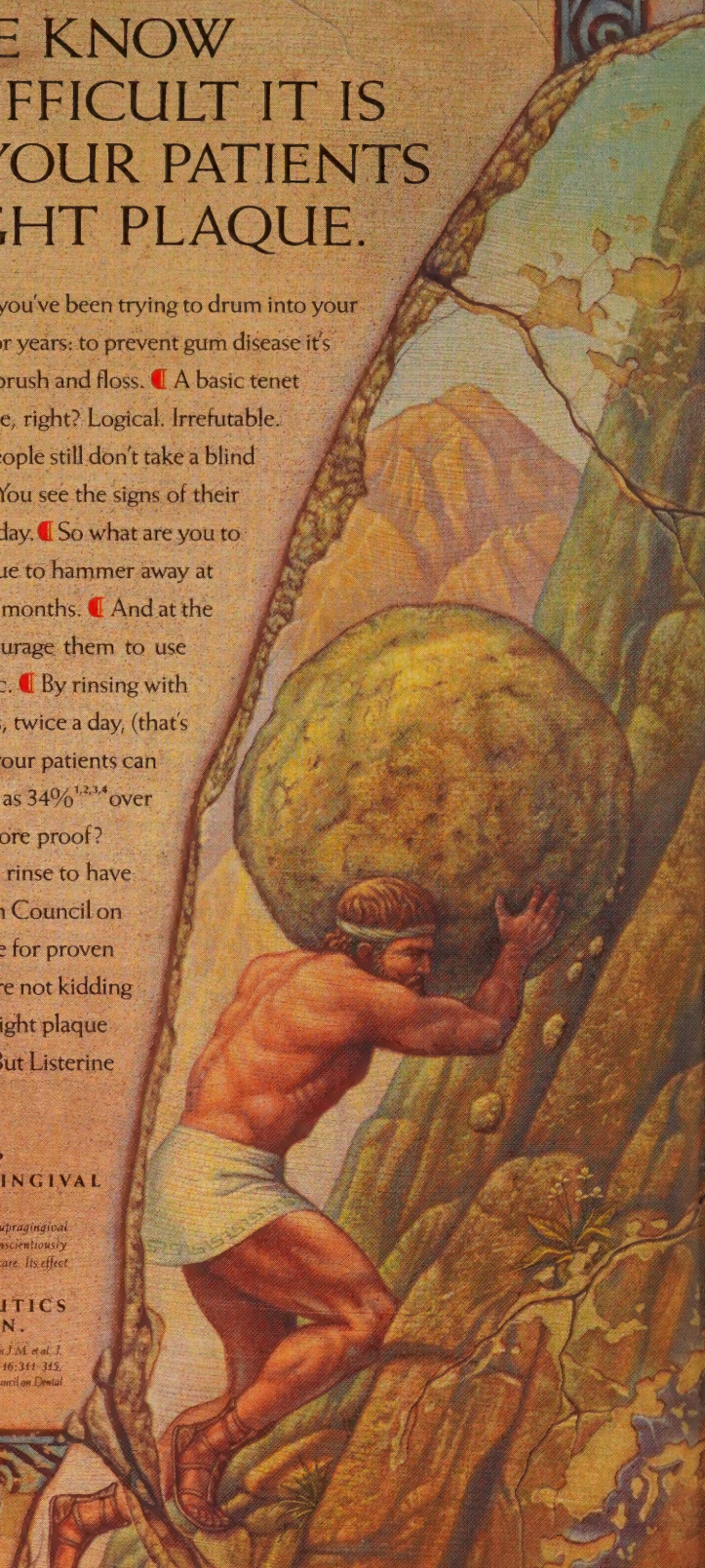
**ACCEPTED BY THE ADA TO HELP
PREVENT AND REDUCE SUPRAGINGIVAL
PLAQUE AND GINGIVITIS.**



Listerine has been shown to help prevent and reduce supragingival plaque accumulation and gingivitis when used in a conscientiously applied program of oral hygiene and regular professional care. Its effect on periodontitis has not been determined.

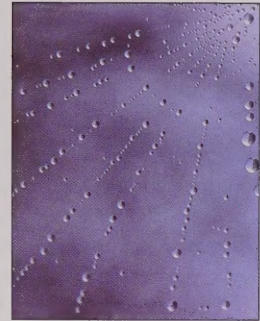
**COUNCIL ON DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION.**

REFERENCES: 1. Langer, I.B. et al. CLIN. PREV. DENT. 5: 12-16, 1983. 2. Gordon, J.M. et al. J. CLIN. PERIODONTOL. 12:697-704, 1985. 3. De Paula, L.G. et al. J. DENT. RES. 46:341-345, 1989. 4. Overholser, D. et al. J. CLIN. PERIODONTOL. 17:575-579, 1990. 5. Council on Dental Therapeutics Accepts Listerine. J. AMER. DENT. ASSOC. 117:515-516, 1988.



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After Five

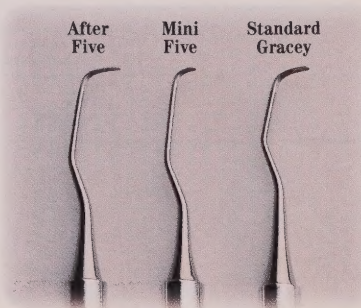
Standard
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We've taken dentistry to new depths.

With the development of the After Five™ and Mini Five™ curettes, Hu-Friedy once again gives you a performance edge.

The After Five and Mini Five are designed with an extended terminal shank, three millimeters longer than the standard Gracey curette. Not only does this enhance your ability to scale and root plane in periodontal pockets of five millimeters or more, it also makes the procedures easier and more efficient.



Both instruments have thin, finely sharpened blades, enabling smooth insertion below the gum line with reduced tissue distention. In addition, the Mini Five's blade is half the length of the After Five, giving you greater access to pockets that are extra tight and narrow.

When used in combination with the standard Gracey curette, the After Five and Mini Five curettes are the precision, high quality instruments you need to reach new depths.

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Ripples on the Surface



Marilyn Goulding

This issue of Probe is dedicated to the 'Surfaces' we deal with in the practice of dental hygiene. We have two scientific papers attending to *polished surfaces* and *chewing surfaces*, an article focusing on the fact that we are merely scratching the surface of professionalism, and a self-assessment test which asks you to reflect on the *surfaces within the oral environment*. Even our Dental Hygiene Profiles section deals with a dental hygienist as inventor/entrepreneur in her development of a new curette for the *planing of surfaces*.

As I scan the surface of dentistry for new and interesting topics for our journal, I am always amazed at the flux of information. The evolution of our science base gallops at an astounding rate. Add to that the revolution of our environment and our culture, and we have a dynamic situation. As science advances in discovery, the environment adds new variables and the culture brings in new trends. There can be no point of convergence where knowledge is attained; it can only continue to be sought.

Can we possibly stay informed, given these contemporaneous advancements? *Informed* may be the wrong focus; certainly an impossible task bound to cause futility. Since advances may constantly change the rationale, but not the principles, of patient care, *staying aware* may be the more appropriate choice of words with the more approachable end.

Awareness is defined, in part, by realization and perception. Professionalism dictates that we *realize* our limitations (where our knowledge ends), and govern our work accordingly. It also infers that professionals *perceive* (inter-

pret in light of experience), where our work could, and more importantly, should, be improved.

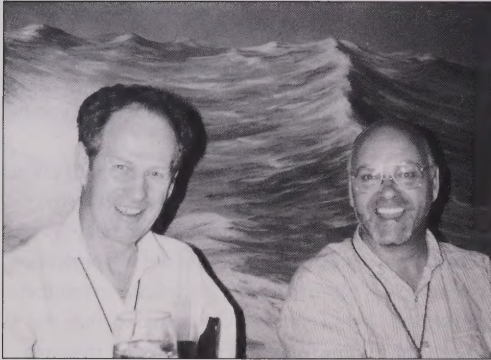
Awareness evokes a chain of events in the professional. *Responsibility* (moral, legal and mental accountability) generates a response and we see professionalism in action. If science, environment, and culture are dynamic so must we, as practising professionals, be dynamic.

So, we're convinced; we must become aware. How is this achieved? Just as the mission statement of the Canadian Dental Hygienists Association commits: "...to cultivate, promote and sustain the art and science of Dental Hygiene..." so membership in the CDHA does just that. *It provides the means for awareness*. It attends to the art of Dental Hygiene; the sculpting of the profession as an entity, and to the science of Dental Hygiene; the study and practice of the professional at work.

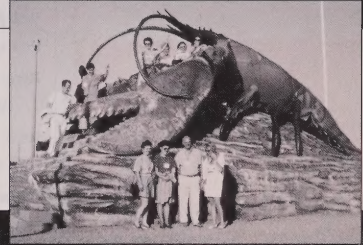
CDHA cultivates, promotes and sustains the arena in which we practise our livelihood, and the manner in which we do it, one day or every day of the week. Our professional association is the driving force behind our emerging professional status. We need to reciprocate in order to cultivate, promote and sustain our CDHA. Individually, you have the opportunity now to act on this mission; by renewing your membership. But, as professionals we need to guard our profession by ensuring this awareness in our colleagues. We are only as strong as our weakest link. Dive in and speak out on the importance of membership in your association. Alone you are a ripple on the surface; bring a friend and create a wave! 🌊

News

Professional Conference – Health Promotion Moncton, N.B., June 1991



CDHA's second annual Professional Conference was another monumental success. There was so much valuable information arising from it that we have decided to dedicate a future issue entirely to "Health Promotion". Watch for it in '92 — until then, enjoy our pictorial of this year's fun and plan to be there next year, in Victoria, British Columbia!



Special thanks

to the following sponsors for their support of CDHA's Professional Conference '91, held in Moncton, New Brunswick.

Air Canada
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CDHA Vice-President



CDHA is pleased to welcome back Fran Cotton who was elected Vice-President, June 1991, Moncton. Fran recently returned from a two-year stint in Texas, where she had been Assistant Professor Health Sciences/Dental Hygiene Program at Midwestern State University, Wichita Falls.

Fran, well-remembered as Probe's former editor, has been active in CDHA and provincial associations for some years. Her many professional activities include being CDHA's Educators' Workshop Co-ordinator in 1986, and SDHA's president from 1983-84. Fran now resides in Prince George, B.C., where she is Division Chair of the Dental Program at the College of New Caledonia.



CDHA Annual Professional Conference, 1992 ~~Vancouver~~, B.C.

Victoria, B.C.

Focus of Conference: **June 6 - 8, 1992 (new date)**

THE DENTAL HEALTH BEHAVIOUR AND NEEDS OF THE OLDER ADULT,

Topics will include those that will help us understand how nutrition, drugs, finances, beliefs, etc., affect the Older Adults' dental behaviour. We will also look at implants, root caries, and periodontology vis-à-vis the Older Adult.

We encourage ALL DENTAL HYGIENISTS TO PARTICIPATE — see the call for Papers/Posters/Videos in this issue of Probe.

The Conference will be held at the Congress Centre in Victoria — Board Meetings and accommodation at the Grand Pacific Hotel. Look for more detailed program and registration information in the Winter Probe.

Plan now to attend **your** Annual CDHA Professional Conference.

12th INTERNATIONAL SYMPOSIUM ON DENTAL HYGIENE, THE HAGUE, THE NETHERLANDS, JULY 1 - JULY 4, 1992

THE DENTAL HYGIENIST: FROM AUXILIARY TO COLLEAGUE

Come and meet dental hygienists from all over the world to exchange experiences in the development of the profession — A development from an auxiliary service to a fully-fledged professional position within the health service. The scientific program will include plenary lectures, free papers, poster/video presentations and demonstrations.

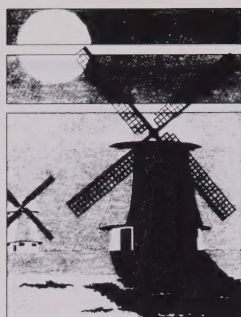
It is also a wonderful opportunity to join the social program and the celebration of the 25th anniversary of the Dutch Dental Hygienists' Association!

Members of the dental health profession, as well as other disciplines from all over the world, are invited to participate in the program activities on the three main topics — the hygienist in relation to: the patient; other members of the health professionals team; and socio-economic structures.

The Symposium will be held in the Congress Centre "Nederlands Congresgebouw" in The Hague. Registration fee will be 500 Dutch guilders — that's about \$285.00 Cdn — exclusive of transfer charges. Turn to page 98 for some helpful travel information.

Sponsored by the International Dental Hygienists' Federation

Hosted by the Dutch Dental Hygienists' Association



THE 12TH INTERNATIONAL SYMPOSIUM ON DENTAL HYGIENE

*The Hague, Holland
July 1-4, 1992*



DIFFERENT TRAVEL OPTIONS AND PACKAGES TO
CHOOSE FROM ON YOUR VISIT TO HOLLAND...

Marlin Conference Management, a division of The Marlin Travel Group Ltd., was recently requested to prepare some options for a group of approximately 100 dental hygienists and their friends attending the upcoming 12th International Symposium on Dental Hygiene, being held in The Hague, Holland.

Based on the fact that Canadians will be coming from all over the country, and will be joined by a great number of fellow hygienists from south of the border, our first recommendation is to have a two day get-together in Amsterdam.

AMSTERDAM: The largest city of Holland offers a colorful mixture of old and new in a tree-lined canal setting.

Once settled, you will take a morning city tour of Amsterdam. A city of contrast and beauty, you begin your tour in the old city. Sights include the Tower of Tears on the quay, a chance to watch master diamond cutters at work and the Rijks museum, where you will view the work of Dutch Masters such as Rembrandt.

After the Old City, you will board a glass-topped launch for a one-hour cruise through some of the city's 50 canals. Mellow, step-gabled mansions and cobbled lanes drift by as you see unsurpassed views of venerable churches, ornate bridges, and Amsterdam's smallest house.

NOW COMES ONE OF YOUR FIRST DECISIONS...

As typically Dutch as you can go...

Spend three days bicycling along pleasant cycling lanes and country roads, through picturesque villages and towns, with many occasions to visit historic sites and museums along the way. Suggested daily routes cover 30-60 km, but it is entirely up to you whether you cycle on your own or pedal along with your fellow cyclists.

No need to worry about luggage or where to stay the night. Your hotel, a cosy converted canal barge, accommodating up to 26 cyclists, follows your route. The boat has 2, 3 and 4 berth cabins, with heaters for cool evenings, (or to dry out wet clothes), a sun deck, dining lounge, kitchen, washrooms and showers. If at any point in the tour you fancy a day off, you are welcome to spend the day on board.

Or do you wish the more traditional European motorcoach...

A half-day tour to Marken and Volendam Villages... a morning excursion to the quaint villages of Holland's polderlands along the Zuyder Zee. First, you go to the Island of Marken. Here, traditionally dressed inhabitants go about life in curious tarred and tiled houses. History lives in

Volendam, too, as sea dykes and tiny, wooden-faced dwellings turn back the clock. At a nearby dairy farm, see tasty cheese in the making before returning to Amsterdam.

A half-day tour to Alkmaar Cheese Market and "Zaanse Schans"... Alkmaar lets you glimpse the festive spirit and traditional market life of old Holland. At the hectic, yet orderly Cheese Market, runners in ancient guild-dress carry cradles piled high with yellow cheese. Here, you'll see Alkmaar's dignified weighing house, celebrated for its masterly "Ruitertjes" clock tower. Later you'll drive to "Zaanse Schans" for a chance to photograph lovely Dutch homes and windmills located along the River Zaan.

Continuing on your way, you visit Aalsmeer, Delft and Rotterdam. Breathtaking floral beauty unfolds at Aalsmeer's flower auction. Half of the country's greenhouses are here, and flowers cut this morning will be sold all over Europe by day's end. Next, through the lowlands to The Hague, seat of Dutch government, where sights include medieval Binnenhof and the Hall of Knights. Wonder at Holland in miniature at Madurodam, where landscapes are scaled down 1/25th natural size. In the picturesque Delft, buy precious momentos in a porcelain factory.

THE HAGUE, SITE OF YOUR SYMPOSIUM...

The seat of the government, a spacious royal city of fine mansions, green parks and imposing facades. Your stay in The Hague will not be complete without a visit to Binnenhof, with the First and Second Chambers and the Knight's Hall. You'll also see the famed Mauritshuis art gallery, Deerpark, and the House in the Woods (a palace of the Queen). Don't miss Old Scheveningen Avenue to the Peace Palace, Royal Theatre and the Palace of the Queen Mother.

YOUR FINAL CHOICE AFTER YOUR CONGRESS... DO YOU HEAD FOR HOME OR JOIN FRIENDS AND CONTINUE YOUR VISIT THROUGH EUROPE.

Come along with us through Dutch lowlands as we head into Germany. Take an orientation drive in Cologne, including a visit to its twin-spired Gothic Cathedral, Europe's biggest. You then have a scenic drive through the wooded Spessart region and along part of the famed "ROMANTIC ROAD" to Rothenburg, on the River Tauber.

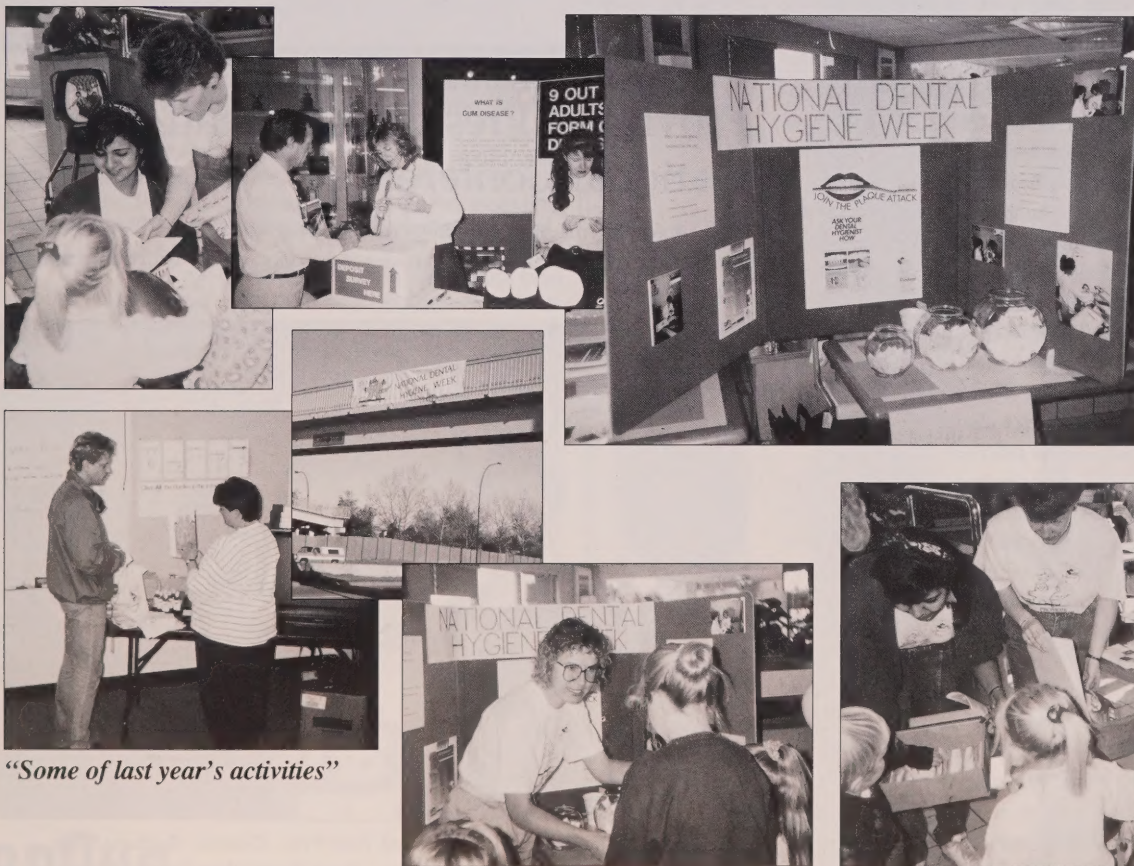
Follow the "Romantic Road" through a landscape of picture book towns where medieval churches, narrow streets and age old customs are all lovingly preserved. It leads us to lively Munich, capital of Bavaria, where sightseeing includes the Frauenkirche and Nymphenburg Castle.

Complete information on detailed itineraries, options, hotels, airfares and schedule, symposium registration and dates call 1-800-267-9676, or contact Dale Scanlan at CDHA, 1018 Merivale Rd., Suite 201, Ottawa, Ont. K1Z 6A5

1991 National Dental Hygiene Week Campaign, October 13-19



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"Some of last year's activities"

Continuing Education Co-ordinator



Nancy Keselyak of Port Coquitlam, B.C., was recently appointed CDHA's Continuing Education Co-ordinator. She brings many years of expertise, having been Continuing Education Chair for BCDHA, Co-ordinator for Dental Hygiene Continuing Education at Vancouver Community College, and a member of the Continuing Education Committee for the College of Dental Surgeons of British Columbia. Recently completing a Master of Arts (Education), her thesis critically analyzed continuing education for dental hygienists in British Columbia, and offered suggestions for the future. She is an education consultant and mentor of several study clubs, as well as being a clinical practitioner in a periodontal practice.

As Continuing Education Co-ordinator, Nancy will avidly promote Canadian dental hygienist participation in various continuing education activities, particularly the Practice Standards Workshop. She also hopes to encourage the formation of study clubs. Liaising with provincial dental hygiene associations and other providers of continuing education to improve communication on continuing education objectives and activities, and enhancing the accessibility of continuing education for dental hygienists in Canada are other important facets.



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Focus of Conference: DENTAL HEALTH BEHAVIOUR
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For further information, please contact:

Ninfa Nicol,
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Provincial Presidents Attend National Conference

An informal meeting was organized during the annual conference in Moncton to provide constituent presidents an opportunity to discuss common provincial issues.



Presidents L to R: Beverly Anne Driscoll, Past-Pres., Ontario; Barbara Long, Saskatchewan; Cindy Clancey, Past-Pres., Nova Scotia; Jean Suvan, Alberta; Shirley Bassett, British Columbia.

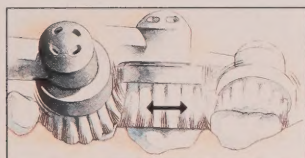
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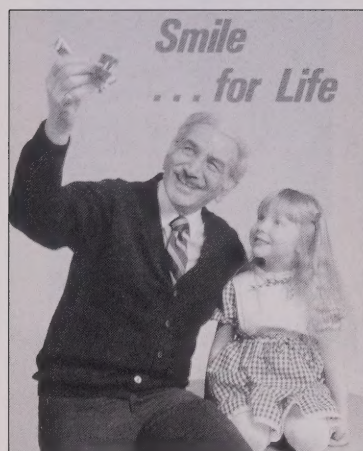
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1991-1992 Membership

Membership invoices were sent in September. If you do not receive your application, or for further information, please contact CDHA Membership Line 1-800-267-5235



CFDE Awards

The following hygienists have recently been selected to receive awards:

Sharon Rogers of George Brown College who, in addition to her partial Warner-Lambert sponsored fellowship, will also receive a CFDE fellowship grant to support her Master's program in Environmental Studies and Health Sciences.

Charla Joyce Lautar of John Abbot College, and **Professor Ellen Brownstone** of University of Manitoba, have been granted CFDE fellowship renewals.

And don't forget that October is CFDE month! This is your opportunity to help ensure a bright future for your profession — a donation envelope has been included with this issue of Probe.

Giving back to the community

The Windsor-Essex County Dental Hygienists Society recently donated \$300 to the Essex County Association for Community Living (ECACL), to be used to provide summer recreation activities for children and adults with developmental handicaps.

Upon the recommendation of one of its members, the component society made the contribution as a grand finale to Dental Health Month. A donation was also made to the Children's Regional Centre.

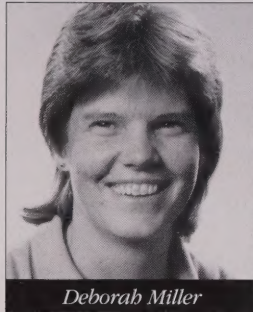
"This is our way of giving back to the community," said Elaine Ray, component society president.

This component society which meets regularly, and offers continuing education to its 35 members, raised the money by raffling a trip for two to Chicago.

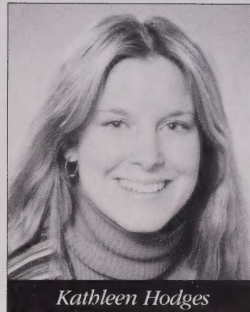
Polishing the Surface

A Comparison of Rubber Cup Polishing and Airpolishing

by Deborah L. Miller, RDH, MS
Assistant Professor, and
Kathleen O. Hodges, RDH, MS
Associate Professor and Clinical
Co-Ordinator—Both of the
Department of Dental Hygiene
Idaho State University



Deborah Miller



Kathleen Hodges

Abstract

This study was designed to compare the clinical effectiveness of rubber cup polishing and airpolishing. Polishing time was controlled to approximate the time spent on plaque and stain removal in clinical dental hygiene practice. Effectiveness of polishing techniques was evaluated using indices to measure plaque, stain, and gingival trauma prior to and after the polishing treatment. Thirty adult subjects, with comparable numbers of teeth contralaterally, exhibiting observable plaque and stain, participated in the study. Patients with contra-indications for either polishing technique were excluded from the sample. Data were collected using a randomized split mouth design; one side of a subject's mouth was polished with a rubber cup and flour of pumice and the other side was polished with the Prophy-Jet® airpolishing device. The time employed for both treatments was held constant at five minutes for each technique. Plaque, stain, and gingival trauma measurements were assessed prior to and following both polishing treatments.

Analysis of variance was utilized to compute the data. Results indicate that, when comparing the effectiveness of polishing treatments, there is no statistically significant difference in plaque removal, stain removal, or gingival trauma within the established time interval. The authors conclude that other factors, in addition to effectiveness and time efficiency, should be considered when selecting rubbercup polishing with flour of pumice or an airpolishing device.

Introduction

In the early 1980s, results of initial investigations into the effects of a new toothpolishing device, called the Prophy-Jet®,

were reported in the literature. This airpolishing system, through the use of air and water pressure, delivers a controlled stream of specially processed sodium bicarbonate to the tooth surface being cleaned.⁶ The manufacturer recommends it be used in the prophylaxis procedure for plaque and stain removal, and that it removes "tenacious, gross stain and heavy plaque from all exposed surfaces of tooth enamel."⁶ Additionally, the manufacturers state that "Airpolishing action cleans more effectively, even deep into pits, fissures, and interproximal areas where a rubber cup just can't reach."⁷ Currently, other airpolishing devices are on the market which have similar designs and functions.^{8,9}

With the advent of airpolishing devices it is important to compare the effectiveness of the two most accepted, and widely used, means of polishing. The investigators chose to study this issue to provide information for educators, practising professionals, and clients.

A review of the literature revealed that plaque and stain removal, and gingival trauma have each been topics of studies comparing rubber cup polishing and airpolishing. Willmann, Norling, and Johnson, in 1980, compared polished smooth enamel surfaces with a jet abrasive, a rubber cup with paste, and an ultrasonic instrument. The study was undertaken, in part, to determine if the jet abrasive does remove extrinsic stain from tooth enamel. The authors concluded that the "jet abrasive removed most extrinsic stain from the tooth surface, except in the deepest pits and fissures";¹⁰ however, stain removal was not measured. The emphasis of this study seemed to be on the effect of each of the three techniques on the enamel surface rather than on plaque or stain removal.¹⁰

Another study was designed to compare efficacy of extrinsic stain removal by air-powder polishing and rubber cup polishing.¹¹ Twenty-five patients were examined prior to and after polishing, using a modified Shaw-Murray stain index and a measurement of gingival trauma to assess stain and trauma.

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Table I Plaque Index (PI)**Criteria For The Plaque Index System**

0 = No plaque in the gingival area.

1 = A film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may only be recognized by running a probe across the tooth surface.

2 = Moderate accumulation of soft deposits within the gingival margin and/or adjacent tooth surface, which can be seen by the naked eye.

3 = Abundance of soft matter within the gingival pocket and/or on the gingival margin and adjacent tooth surface.

The authors reported that air-powder polishing removed 76.3 per cent of extrinsic stain and the rubber cup removed 47.4 per cent of extrinsic stain when evaluated after the initial treatment. Gingival trauma was produced by both polishing methods and was reported to be statistically significant ($p < .05$) with both techniques (1.47 ± 1.70 with air-powder; 3.65 ± 2.84 with rubber cup).¹¹

Mishkin and others conducted a study to compare the effect on the gingiva of routine polishing with the Prophy-Jet® and rubber cup techniques. Twenty-one subjects with healthy gingiva or slight gingivitis participated, a split-mouth research design was used, and a gingival trauma index was employed to measure gingival irritation.

The Prophy-Jet® caused a statistically significant increase in gingival irritation immediately after treatment; however, the difference was not significant at 7 and 21 days post-treatment.¹²

Weeks and others studied routine removal of plaque and stain, as well as the effects of removal on marginal gingiva. Patients had one-half of their mouth polished with pumice and the rubber cup, and the other half polished with the Prophy-Jet®. Thirty patients were examined prior to and after treatment and standard indices were used to measure debris and stain. During treatment the operator polished until all stain and plaque were removed and treatment time was then recorded. Results indicated that the Prophy-Jet® removes plaque and stain equally as well as the rubber cup, and that less time for removal was required when using the Prophy-Jet® (rubber cup method mean of 13.4 ± 6.0 minutes; Prophy-Jet® method mean 5.5 ± 3.6 minutes).¹³

In part two of this clinical trial, twenty-three patients were examined using a gingival Trauma Index prior to, immediately

after, and at six and twelve days post-treatment. A statistically significant difference in the Trauma Index was reported from immediate pre-treatment to post-treatment when teeth were treated with the Prophy-Jet®. Six days after treatment, however, the Trauma Index had returned to the pre-treatment level.¹³

In summary, effectiveness of each of these polishing techniques appears to be at least equal when evaluating plaque and stain removal. When evaluating the research on gingival trauma produced with each technique it is clear that both techniques produce some degree of trauma. In two studies

the Prophy-Jet® device produced a statistically significant increase in trauma when compared to rubber cup polishing immediately post-treatment. At a six or seven day re-evaluation of the tissue, however, it was found that there was no statistically significant difference in trauma scores when comparing polishing techniques. Some of the research reviewed also addressed the time factor when polishing. In the studies which compared plaque and stain removal it seems that time was not controlled, meaning that polishing was performed until a stage of complete removal was reached. A few studies,^{11,13} and the manufacturer of the Prophy-Jet,⁸⁷ elude to the ability of the Prophy-Jet® device to polish teeth in less time than when polishing with the rubber cup.

Table I Stain Index (SI)

Stain Characteristic	Score	Description
Extent	0	No stain detected, only tooth color stain over a third of region
	1	Third of region
	2	Stain over two thirds of the region
	3	Stain over more than two-thirds of the region

Researchers also have studied many other factors related to airpolishing such as enamel, dentin and cementum alterations, effects on restorative materials, value in periodontal therapy, effects on the enamel-sealant surface, and even blood pH and electrolyte concentrations. Limited studies have directly compared the effects of rubber cup polishing and airpolishing.

The first study about the effects of airpolishing on enamel was published in 1980.¹⁰ The rubber cup, jet abrasive, and ultrasonic were compared and results showed that the rubber cup left a more highly polished surface when observed with

preparation during surgery were studied. Surgical sites subjected to the Prophy-Jet® tended to have slightly lower inflammation scores than control sites treated with hand instrumentation alone.³² However, research about the value

of airpolishing in periodontal therapy is preliminary to date.

Literature reveals positive results when using airpolishing to prepare occlusal surfaces for sealant placement. One scanning electron microscopic study showed that airpolishing consistently removed residue, while the teeth treated with pumice showed fissures filled with pumice materials as well as residue.³³ In another study evaluating the resin tags produced after occlusal surface preparation, it was found that airpolishing and acid-

etching produced the highest number of resin tags and the rubber cup and pumic and acid-etching group ranked the second highest in number of resin tags. The authors, therefore, noted some slight benefit for sealant retention when preparing the tooth with airpolishing; however, the differences found between groups were not statistically significant.³⁴ Again, it appears future research in this area would be valuable.

Synder, et al,³⁵ recently studied the changes in arterial blood chemistry of dogs resulting after using the Prophy-Jet®. The values for pH of sodium, bicarbonate, and other electrolytes did not change at a clinically significant level. The authors suggested a similar study be conducted in healthy human subjects so a basis for recommendations for medically-compromised patients can be established.³⁵

The current study was designed to simulate a private practice environment and examine factors relevant to practitioners and clients. Plaque and stain removal with each instrument were compared as well as gingival conditions immediately post-treatment.

Methods and Materials

A sample of thirty volunteer subjects participated in this study, which was conducted in a university dental hygiene clinic. Excluded from the sample were: minors under the age of 18 years, people on a sodium-restricted diet, those with a history of infectious disease, or an individual presenting any other contra-indications to either polishing treatment (i.e., highly polished restorations). All subjects had to exhibit comparable numbers of teeth contralaterally with observable plaque and stain. The thirty subjects ranged in age from 23 to 63 years with eleven females (36.7%) and nineteen males (63.3%). The majority of subjects were recall patients with varying periodontal disease classifications. Each subject was receiving professional treatment performed by a senior dental

Table III Trauma Index

0 = No abrasion, no bleeding, no colour change
1 = No noticeable epithelial abrasion, slight bleeding on probing, slight colour change
2 = Some epithelial abrasion, considerable bleeding on probing marked colour change
3 = Marked abrasion exposing underlying connective tissue, profuse bleeding (non-provoked), considerable colour change

the naked eye. When examined with a light microscope method, the rubber cup left a less irregular polished surface than other methods.¹⁰ Further research into abrasiveness with airpolishing continued to be conducted by numerous authors.¹⁴⁻²² Orton, in a review of the literature on airpolishing, summarized the results of various studies by stating that "enamel appears to be the least affected" tooth surface and "various investigators have noted a significant amount of abrasion of the cementum and dentin after airpolishing".²³ The investigators agree with Orton's conclusions about enamel, dentin, and cementum abrasiveness.

Various authors also have tested the abrasiveness of the sodium-bicarbonate airpolishing slurry on restorative materials. There is general agreement that most materials studied, such as composites, amalgam, porcelain, and gold exhibited a rougher surface after treatment with airpolishing²⁴⁻²⁸ and that composites, especially small-particle composites, exhibited the greatest amount of abrasion.^{24-26,29} Roulet and Roulet-Mehrens³⁰ point out that almost all polishing pastes also roughen the surface of dental restorative materials and that any polishing, if indicated, should be completed with a carefully selected paste. In a study comparing airpolishing to rubber cup polishing in various restorative materials, however, it was concluded that both the Prophy-Jet® and rubber cup with pumice and water slurry caused loss of integrity of test surfaces, and that the depth of loss appeared greater with the Prophy-Jet®.²⁶

Limited studies have been conducted on the value of airpolishing in periodontal therapy. In one study comparing tooth root topography following instrumentation with an air-powder abrasive, a reciprocating contra-angle system, and a hand curet, results showed a smoother root surface was created with the air-powder abrasive than with the other treatments.³¹ In another study using an animal model, the effects of an air-powder abrasive on periodontal tissues in root

hygiene student when invited to participate in this study. The polishing procedures were performed at a minimum of one week after all scaling and/or root planing was completed to allow for initial healing of irritated gingival tissue.

Methodology and data collection procedures were designed to test the following null hypothesis:

- There is no statistically significant difference in plaque index scores, stain index scores, or gingival trauma index scores when comparing polishing performed with a rubber cup to polishing performed with an airpolishing device for an equal amount of time.

A pilot study was conducted to determine intra-rater reliability for both investigators. The first investigator was responsible for collecting and recording pre-treatment and post-treatment plaque, stain, and trauma scores for all subjects. Intra-rater reliability for this investigator was established through repeated use of the indices until consistency was attained. The second investigator was responsible for delivering identical instructions to all subjects and providing polishing treatment according to either manufacturer's instructions (airpolishing device) or accepted dental hygiene procedures (rubber cup polishing). During the pilot study, consistency in delivery of treatment regimes was established through peer critique of correct, consistent technique during repeated polishing treatments using both devices.

Three dental indices were chosen to measure effectiveness of the polishing devices. The Plaque Index (PI)³⁶ was chosen to evaluate plaque removal, (see Table I) and the Stain Index (SI)³⁷ was utilized to evaluate stain removal, (see Table II). Due to the subjectiveness of the intensity portion of the index, only the extent portion of the index was used. The gingival Trauma Index (TI)¹³ was used to measure the presence and/or extent of gingival trauma, (see Table III).

Each subject gave informed consent and received identical information concerning the procedure. A split-mouth design was employed so that each subject served as his/her own control. One investigator, blind to the method of treatment, collected pre-treatment and post-treatment plaque, stain, and gingival trauma index scores on the smooth surfaces of two anterior and four posterior teeth on each side of the mouth. The second investigator randomly selected the technique to use first and the side of the mouth to polish first. One side of the mouth was polished for five minutes using a rubber cup with flour of pumice. The opposite side of the mouth was polished for five minutes with an airpolishing device. The subjects were not aware that the procedures were timed. Both polishing treatments were performed in the same dental unit using the same equipment. Following the completion of the

Table IV

Result of Analysis of Variance for Each Parameter Measured			
Parameter	df	F	Significance of F*
Plaque	1	0.815	0.369
Stain	1	0.101	0.741
Trauma	1	1.205	0.275
*p<.05			

polishing treatments, post-treatment plaque, stain, and gingival trauma scores were collected.

Because polishing is usually performed until total removal of plaque and stain is accomplished, there are no standard and accepted time parameters for this procedure. In an effort to evaluate effectiveness without allowing the operator unlimited time, time was controlled to simulate a private practice environment. The ten minute time limit in this research design (five minutes for each technique polishing half of the mouth) was established by input from practitioners, educators, clinical board testing time constraints, and documentation from a previous study evaluating the time necessary for total removal using both polishing techniques.¹³

Results

The pre-treatment and post-treatment scores of plaque, stain, and gingival trauma were analyzed for statistical differences between treatments. Three separate one-way analyses of variance were employed to analyze data collected. Results indicate that there is no statistically significant difference in index scores for plaque, stain, or gingival trauma when comparing polishing performed with a rubber cup to polishing performed with an airpolishing device for an equal amount of time (p<.05). Table IV presents the results of the analysis of variance for each parameter measured.

Mean pre-treatment and post-treatment Plaque Index scores, Stain Index scores and Trauma Index scores, as well as standard deviations, for each treatment group are presented in Table V. The differences between pre-treatment and post-treatment means for each parameter were calculated and are also shown in Table V.

Discussion

An examination of the mean and standard deviations of plaque removal scores reveal that the subjects in either treatment group had comparable amounts of plaque prior to treatment as well as when the two polishing techniques were completed. The mean difference of removal (RC=7.3; AP=7.5) was nearly equivalent for both techniques and was not

statistically significant. Therefore, within a five minute period of polishing per half mouth, both techniques removed virtually equal amounts of plaque (refer to Table V). This finding might indicate that under average circumstances in the private practice environment neither method is more effective in plaque removal.

Manufacturers' advertisements about airpolishing devices elude to superior stain removal in less time than other polishing methods. A close inspection of Table V discloses that although the pre-treatment Stain Index mean scores were almost equal (RC=12.9; AP=12.8), the post-treatment Stain Index mean scores indicate that the rubber cup removed slightly more stain than the airpolishing device within the five minute polishing interval (RC=6.8; AP=7.5). The fact that there was no statistically significant difference in stain removal effectiveness between techniques in this study, disagrees with the findings of Munley, et al.¹¹ that the airpolishing device was superior in stain removal. Again it would seem that when applying these results to the practice setting, neither technique is superior in stain removal from smooth surfaces.

It should be noted that in a few previous studies polishing was continued until plaque and stain were removed and time required was recorded or disregarded. In this study, however, time was held constant and the amount of stain and plaque removed was measured.

Therefore, any comparisons of results of previously published studies with this study should consider the difference in research designs.

Previous reports also suggest that immediate post-treatment gingival trauma as a result of polishing is greater with an airpolishing device than with a rubber cup polishing device^{12,13} and that both techniques produce a statistically significant amount of trauma ($p<.05$).¹¹ The results of this study do not support that conclusion because no statistically significant difference in gingival trauma existed between polishing

devices ($p<.05$). Table V shows that pre-treatment mean trauma scores were almost equivalent (RC=0.3; AP=0.2) and that the post-treatment mean trauma score for the rubber cup technique was less than for the airpolishing device (RC = .5; AP = 1.2).

The authors conclude that the three parameters studied (plaque, stain, trauma) should not be the determining factors in selecting a polishing technique. Because both stain and plaque remained on some subjects, it also can be concluded that ten minutes for polishing is not adequate to provide all patients with quality care when using either method of polishing. It should also be noted that occlusal surfaces were not evaluated for plaque or stain removal. When selecting a polishing technique the authors recommend that it is extremely important for clinicians to examine patient conditions such as amount and location of stain, presence of recession, root sensitivity, recall interval, and the type of existing restorations.

According to results of past studies it seems airpolishing is safe for use on sound enamel^{15,16} however, one researcher cautioned that demineralized areas of enamel surfaces are especially vulnerable to additional abrasion.¹⁵ It would seem, however, that airpolishing on sound enamel for pit and fissure sealant placement shows great promise. Galloway and Pashley¹⁴ comment that the manufacturer's warning against prolonged use of the Prophy-Jet® on exposed root surfaces is too vague due to the serious ditching or pitting that occurs to exposed dentin and cementum. Newmann et al.¹⁸ arrived at similar conclusions stating that use of airpolishing on periodontally affected areas is not recommended.

The manufacturers of the Prophy-Jet® do caution operators against its use on highly polished restorations. It would seem this contra-indication needs to be expanded to include other restorative materials as well. Authors clearly concluded that use on composites should be avoided, and that if composites

should be exposed to airpolishing they will need to be repolished with an appropriate agent. Use on cements, porcelain, cast restorations, and all other non-metallic restorations could also be included as contra-indications for the Prophy-Jet's® use. Additionally, in selection of a polishing technique patient contra-indications to either method and patient preference for either polishing technique need to be evaluated when the decision is made as to which polishing technique is most

Table V

Mean and Standard Deviations of Each Parameter Measured for Both Treatment

PARAMETER	PRE-TREATMENT	POST-TREATMENT
Plaque	RC 10.8 +/- 6.3	3.5 +/- 3.0
	AP 9.9 +/- 5.5	2.4 +/- 1.9
Stain	RC 12.9 +/- 6.6	6.8 +/- 4.4
	AP 12.8 +/- 5.5	7.5 +/- 4.3
Trauma	RC 0.3 +/- 0.8	0.5 +/- 1.0
	AP 0.2 +/- 1.1	1.2 +/- 2.6

RC = rubber cup
AP = airpolishing

appropriate for the patient. When the clinician reviews all of these considerations, as well as others, she/he is most likely to exercise sound clinical judgement in treatment planning for this service.

Topics for future research could focus on some of the indications and contra-indications for use of the Prophy-Jet® by comparing traditional rubber cup polishing with commonly used prophylaxis pastes and airpolishing. These comparisons would allow professionals to make realistic judgements about the safety of polishing, especially with the Prophy-Jet®. 🌱

Acknowledgements

The Authors wish to acknowledge the contributions of the dental hygiene faculty and students for their support and clinical participation, and Dr. Coke Brown for his statistical consultation. This research was partially supported by Grant No. 614 from the Faculty Research Committee, Idaho State University, Pocatello, Idaho.

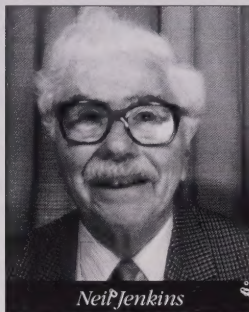
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The Chewing Surface

Chewing and Saliva Flow — effects on the oral environment —

by Emeritus Professor G. Neil
Jenkins, PhD, D.Odont, DSc,
FDS and Professor W.M. Edgar,
BDS, BSc, PhD, DDSc



Introduction

For many years, the notion has been current that individuals could assist in maintaining their own dental health by adopting measures to increase saliva flow. Recommendations to chew hard fibrous foods, like carrots and apples, have been made to substantiate their value in stimulating saliva, as well as claims to remove plaque by mechanical action. Chewing sugarfree gum has been promoted as an aid to oral hygiene, and has been suggested as a vehicle for administering preventive agents against oral disease, including antibodies, fluoride, phosphates and enzymes.

The purpose of this paper is to review the role that saliva plays in oral health and, more specifically, the role of chewing sugarfree gum as a potential adjunct to caries management.

Saliva — Its role in preventive dentistry

The stimulation of saliva as a natural defence mechanism of the body has received considerable interest — in particular its action in removing sugar from the mouth, in neutralizing and buffering acids in plaque, and in maintaining tooth mineral by producing a saturated environment of calcium and phosphate ions.

Recent research has reawakened interest in the dental benefits of sugarfree gum, because of its prolonged stimulation of salivary flow and the attendant increase in the protective effects of saliva against caries. When gum is chewed, there is initially a dual stimulus to salivation via the taste reflex and mechanical (masticatory) stimuli. When the sweeteners are chewed out, there is continuing stimulation from mastication alone. No other single item of food in normal use gives rise to such a prolonged salivary benefit as sugarfree gum.

Caries as an issue

In spite of the dramatic fall in incidence of caries in many countries during the 1970s,^{1,2} the problems that this disease

presents are by no means fully solved. There is some indication that the incidence of the disease has stabilized, i.e., the decrease is being maintained but is not becoming larger.^{3,4} There is, however, still a need for other preventive measures for much of the population, with three groups in particular requiring attention:

1. high-risk groups in the population (e.g., the economically or physically disadvantaged);²
2. the elderly who have not had the advantages of regular exposure to therapeutic fluoride concentrations and whose root surfaces may be newly exposed to caries challenge following gingival recessions, and who may also suffer from hyposalivation as a side-effect of medications; and
3. people coming from third-world countries to Canada who increase their consumption of cariogenic foods, in the absence of good oral hygiene practices.

The effects of saliva on caries

Traditional methods of oral health care — topical fluorides including fluoridated dentifrices, brushing and flossing, and regular dental check-ups, are important in managing this disease condition. However, there is a need for recognizing other measures that assist in preventing caries, particularly for those patients that have been identified as high-risk.

The importance of saliva, in moderating the pH drop in plaque after sugar ingestion (the "Stephan curve"), is shown by the observation that when access of saliva to the plaque is restricted, the pH falls to lower values and does not rise as quickly.⁵ The overall importance of saliva in protecting against caries is shown by the severity of caries in patients suffering from hyposalivation (xerostomia). When patients' saliva flow rate and caries experience have been compared, several (but not all) studies have demonstrated a relationship between high caries and low flow rate, but a consistent

relationship has been found between high caries and low buffering capacity of saliva.

Furthermore, if it were not for the fact that saliva is saturated with calcium and phosphate ion, the mineral of the teeth would slowly dissolve in saliva. These same ions are known to be capable of remineralizing (repairing) the early stages of mineral loss in caries development.

The effects of chewing gum on plaque pH

When a sucrose-containing gum is chewed, the pH of the plaque is found to fall,^{6,7} although the extent of the pH fall is not pronounced (probably because the prolonged chewing raises the salivary flow rate, accelerating sugar clearance, as well as buffering the plaque acids). In contrast, sugarfree gum raises the plaque pH, presumably because the bicarbonate-rich saliva is alkaline and little or no acid is being produced in the plaque from the sugar substitute.

The practical interpretation of these experimental findings — i.e., that sugarfree gum is non-cariogenic — is confirmed by clinical data.⁸

When however, the plaque pH is already low because of a prior intake of fermentable carbohydrates, consumption of chewing gum (whether sucrose-containing or sugarfree), causes the pH to rise rapidly towards its normal, "resting" value. In the case of sugarfree gum, this effect can be explained by the rapid neutralization of plaque acids by salivary bicarbonate, in the absence of further substrate for acid production, and the accelerated sugar clearance.^{9,10} With sucrose-containing gum, it is assumed that the small amount (about 2 g) of additional sugar is a negligible addition to the carbohydrates in the prior intake, and that continued salivary stimulation, when this sugar has been chewed out, serves to neutralize the previously low plaque pH.^{11,12}

These effects depend upon a regulated use pattern — for maximum benefit, the gum must be chewed immediately following sugar challenge (i.e., after meals or snacks), and chewing must be continued for a sufficiently long period — at least 20 minutes. This neutralizing action of chewing gum implies clinically that chewing gum for at least 20 minutes after carbohydrate-containing meals or snacks might be expected not only to be non-cariogenic, but perhaps also to inhibit caries by reducing the challenge to the teeth from other foods, by mobilizing the salivary defence mechanisms when they are needed most.

Effects of chewing gum on remineralization

As mentioned, saliva contains calcium and phosphate ions which contribute to the mineral of the tooth. These ions have been found to be effective in remineralizing early caries ("white spot") lesions.

A recently published study measured the extent of remineralization when sorbitol gum was used after meals and snacks compared to no gum. In the experiment, a demineralized section of human enamel was worn by subjects who used

fluoride toothpaste. The same subjects underwent two 3-week treatments; one with 20 minutes of gum chewing, and one without. Results showed enhanced remineralization with sorbitol gum chewing due to the increased flow of saliva.¹³

In addition to the effects on plaque pH, these remineralization effects strengthen the evidence of a potential beneficial effect of chewing sugarfree gum for 20 minutes after eating. The enhanced remineralization can be attributed partly to neutralization of plaque acids, but mainly to the increased driving forces for remineralization in stimulated saliva. The effect may also be exerted by sucrose-containing gum; preliminary studies suggest similar remineralization when sucrose gum is employed in the same fashion.¹⁴

Comparative effects of sugar substitutes

Sugarfree chewing-gums are sweetened with a variety of polyols including sorbitol, mannitol, and xylitol. These polyols are less sweet than sucrose, and high-intensity sweeteners are therefore added during manufacture to provide sweetness comparable to that of sucrose. Typical high-intensity sweeteners are aspartame (NutraSweet®), saccharine and acesulphame-k.

When bacteria from the mouth are incubated with sugar substitutes *in vitro*, growth, acid production and pH fall are often greatly reduced compared with glucose or sucrose.¹⁵ Furthermore, differences between the various sugar substitutes are found, with xylitol being non-acidogenic or even inhibitory to acid production.

Sorbitol is slowly fermentable by some organisms (notably the mutans group of streptococci), while xylitol is not. Because of evidence that xylitol can inhibit bacterial acid production under certain circumstances, it has been regarded as having a potentially cariostatic effect.¹⁶ However, these results should not be used uncritically to predict responses to different sugar substitutes in the mouth. *In vivo*, the rate of acid production from sorbitol is so low that the alkaline flow of saliva overwhelms it when plaque pH is measured while subjects chew a sorbitol-containing gum. Differences in acidogenicity between sorbitol- and xylitol-based products are probably of no clinical significance.

The *in vitro* and *in vivo* effects of xylitol have been comprehensively reviewed.¹⁶ A few comparisons have been made *in vivo* of the relative effects of xylitol and other polyols on the amount, biochemical properties or microbiological composition of plaque, but not of the *in vivo* plaque pH response to a sugar challenge. Nor do any direct comparisons of the anti-caries effects of xylitol- and sorbitol-based products appear to have been carried out, although the anti-caries action of an xylitol-containing gum has been shown in a recent Canadian study by Kandelman and Gagnon.¹⁷ In this study, a dose-response relationship was not found between the xylitol level and the caries reduction, suggesting a non-specific salivary mode of action as opposed to a direct effect on plaque microbiology or remineralization.

Comparison of the remineralizing effects of sorbitol gum and an xylitol-containing gum similar to that used by Kandelman and Gagnon showed no difference.¹⁸

Gums containing sorbitol and xylitol are of approximately equivalent sweetness. No differences would be predicted between their ability to stimulate salivation.¹⁹ It seems more than likely any sugarfree chewing-gum can exert potentially cariostatic actions, independent of which sweeteners it contains.

Conclusions

Summarizing — saliva's role as the "unsung hero" of preventive dentistry is beginning to be recognized, with the increased understanding of its several beneficial actions. Principal among these are its diluting action in salivary clearance, its buffering and neutralizing action on plaque pH, and its remineralizing effect. These actions play a part in maintaining normal oral health by controlling the chemical equilibrium between the process of de- and remineralization. This controlling action can be manipulated beneficially by regulation of patterns of consumption of foods and snacks — notably by chewing sugarfree gum after meals. 🍬

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Neil Jenkins trained as a physiologist and biochemist at Liverpool University, England, in 1936. He pursued his PhD on nutritional topics at Cambridge University. There his superior was Sir Frederick Hopkins, FRS, the co-discoverer of vitamins. Following a long stint of teaching physiology at St. Barts Medical College in London, England, he ventured into the dental field teaching physiology and biochemistry to the dental students at Newcastle upon Tyne. He also organized a research department, and became Professor of Oral Physiology in 1962. His textbook "The Physiology and Biochemistry of the Mouth" has gone through four editions, and has been translated into Spanish and Japanese. His research has been on saliva, plaque and dietary methods of preventing dental caries, including the effect of cheese. An active sponsor of fluoridation, he has conducted extensive studies on the mode of action and safety of fluoridated water. This work earned him the Trendley Dean Prize in 1980, awarded by the International Association for Dental Research. He has received honorary degrees from the Royal College of Surgeons, London, England, and the Universities of Kuopio (Finland) and Manizaba. Although now retired from his chair (1980), Emeritus Professor Jenkins continues writing and researching — focusing on fluoride and the anti-caries effects of cheese. He also holds visiting professorships at Cape Town, Chicago, Minneapolis, Edmonton and Toronto.

Mike Edgar graduated from Newcastle Dental School, England, in 1963, and after one year in hospital practice read for an honours degree in physiology (1966). He then joined Neil Jenkins in oral physiology — a fruitful collaboration which did not end in 1980 with Professor Jenkins' retirement. In 1982, Professor Edgar was appointed to the Chair of Dental Science at Liverpool Dental School, where he has continued to expand research in the structural and functional aspects of oral biology in animals and human subjects especially as they apply to dental disease including caries. His particular interest has been the interactions between foods, and between foods and saliva, in determining the cariogenic potential of the diet.

Scratching the Surface of Professionalism

The Image of Dental Hygiene



by Deborah Smith, RDH, who wrote this paper while a student at Seneca College, Toronto. She graduated from the Dental Hygiene Program in 1990, and is currently a faculty member of the Dental Programs, Fanshawe College, London, Ontario.

The 1990s could become the "decade of recognition" for the emerging profession of dental hygiene. A foundation for the future may have been established by an Ontario Government review of the Health Professions. The government's Health Professions' Legislation Review process recognized that many health professions, including dental hygiene, were being regulated under outdated, restrictive statutes. After consideration of proposals from the health professions, the government granted approval for self-regulation to the dental hygienists of Ontario. This, in effect, recognizes dental hygiene as a distinct health profession, with the power to regulate its members and activities. Self-regulation represents a major step in elevating the image of dental hygiene as a separate and unique profession. Historically, dentistry has regulated the practice of dental hygiene in Ontario, which may have contributed to the somewhat ambiguous definitions of dental hygiene as a profession. This new "identity" offers the opportunity for dental hygiene to experience growth, maturation and increased autonomy as a profession.

In the Federal Government's Report of the Working Group on the Practice of Dental Hygiene, dental hygiene is identified as an "occupation undergoing professionalization". This is based on the fact that dental hygiene practice is evolving from a "list of functions" to a "process of care".¹

As dental hygiene emerges as a profession, it appears that there is much to accomplish in enhancing the professional image with other health care providers, the dental profession, the dental industry and the general population.

In their 1987 article, Parker and Chan reported on the results of an American study which asked four groups of health care professionals to rank the "prestige" of thirteen allied health professions. The study polled physical therapists, occupational therapists, nurses and physicians, asking them to rank the prestige of dental hygiene and twelve other allied health professions. The results placed dental hygiene tenth and below in each group's opinion. From these results, the

authors used a common scale to assign a prestige score to the profession of dental hygiene. The determined score was then compared with those of other professions and occupations. The dental hygiene prestige score of 60.9-66.2 would place them with non-professionals according to the National Opinion Research Centre studies.² Although it is often difficult to make direct comparisons between Canadian and American professions and occupations, this ranking should be of concern to Canadian dental hygienists, especially as the results were from data obtained from health care professionals.

The results of this study suggest that other health care providers may be unaware of the vital role dental hygiene plays in health care. This may be due, in part, to the fact that all groups surveyed work primarily in hospital settings. Dental hygienists traditionally practise in private practice settings; and because of this, may have limited visibility and contact with other health care professionals.

In a 1989 report, Ontario's then Minister of Health, Elinor Caplan, identified several priorities for health care in her province. The report recognizes that health care has traditionally focused on services provided by physicians and that a need exists for teamwork among all health professionals. Improvement in Ontario's health care system would see the development of more community-based services, and an increased role for other health professionals in the provision of long-term care. It is, therefore, reasonable to predict that these priorities, along with the revised health professions' legislation, will see the role of dental hygiene increasing in the provincial health care system. As dental hygienists move into the non-traditional setting of hospitals, they will become integral members of the health care team. Through this teamwork, dental hygiene can strive to establish its credibility and rightful place within the health professions.³

Dental hygiene must identify the factors that influence the perception of the profession by health care providers. One factor currently being examined is that of educational preparation. If dental hygienists are to function effectively within hospitals and institutions, additional academic programs will need to be established. The present momentum is to expand the dental hygiene curriculum to a baccalaureate level. Such curriculum expansion would prepare the graduate for the increased responsibilities in public health, hospital administration, education and research. This can only be viewed as a positive goal for the future, as many other groups in health care have university preparation. A degree program, offering "specialization" options, would facilitate educational preparation reflecting the individual's choice of practice direction.

Dental hygiene is demonstrating its potential in health care with the expansion of services into the geriatric community.

This segment of the population may not access dental care through traditional settings due to economic, geographic and transportation constraints. With the possibility of relaxed supervision regulations dental hygiene, as a profession, could demonstrate leadership in organizing and implementing programs in collective living centres, chronic-care facilities and hospitals. The outcome could mean accessible oral health care for the elderly, and an increased visibility for dental hygienists. The provincial governments' mandates to provide accessible health care may be instrumental in facilitating the implementation of such programs.

As the dental hygiene profession matures, efforts must also continue to strengthen the collaborative relationships within dentistry. Dentists may view any move, on the part of dental hygiene to establish itself as a profession, as a move toward alternate practice arrangements.

While many dental hygienists may be content with the present practice structure, one cannot ignore the intrinsic limitations for professional growth, autonomy and advancement. These internal struggles have been experienced by other emerging health care professionals. Physical and occupational therapists now experience professional autonomy while maintaining a highly collaborative relationship within the medical profession. Dental hygiene will undoubtedly experience "growing pains"; however, professional respect, autonomy, career opportunities and collaborative relationships within dentistry are goals worth striving toward.

Does dental hygiene have a clear vision of its own self-image? Perhaps the "traditional" role of the dental hygienist has provided little incentive to expand our professional image. Dental hygiene will always remain closely associated with the practice of dentistry, but we must strive to demonstrate our individual professionalism if our collective image is to be enhanced in the future. The professional associations for dental hygienists are actively enlisting the services of public relations experts to effectively market the profession. The establishment of dental hygiene "campaigns" serve to highlight the role of dental hygiene in health care and increase the public's awareness of its function. Associations promote dental hygiene within the dental industry, as demonstrated by changing product advertising in the US and Canada. Periodically, the Canadian Dental Hygienists Association has had to respond to dental hygiene concerns that the statement "only a dentist can remove tartar", failed to recognize the role and responsibility of the dental hygienist in providing periodontal treatment. When questioned, manufacturers have claimed that their marketing departments were "not familiar enough with the role of dental hygienists and unaware of their importance in both product recommendation and patient information".

The concern with this issue is two-fold. First, is the image of dental hygiene so weak that major manufacturers are indeed unaware? Do manufacturers feel that dental hygiene

does not have a sufficient influence in health care to be consulted on issues of product research and promotion? It seems clear that the dental hygiene profession must continue to assert its presence and promote the role of the dental hygienist in product recommendation and consumer education. The second concern is the effect of such "glitches" when companies use mass media to promote their products. Television commercials, magazine advertisements and product brochures that omit the mention of the dental hygiene role in oral health care, influence the public's perception of the profession. The power of advertising cannot be ignored, and it behooves the dental hygiene profession to strive for recognition through increased liaisons within the dental industry.

The public's perception of dental hygiene is affected not only by the media, but also through personal contact within communities. The professional associations have done much to increase the public's awareness through promotional campaigns, media interviews and increased visibility within the community. The public can in turn influence the growth of the profession by increasing demand for dental hygiene services which will lead to the development of additional community-based programs.

It is clear that dental hygiene must earn its rightful place among the professions. It seems that the pursuit should begin from within, by identifying those factors which can enhance the professional image of dental hygiene. An active role in determining future educational programs must be undertaken by the leaders of the profession if dental hygiene is to experience growth in the coming years. Strengthening the professional image can only come from commitment to quality health care, ethical behaviour and collaboration with other health care professionals.

As a profession, dental hygiene has come "a long way", but has yet to realize its full potential. The dental hygienist's role in health care is too important to remain in the shadows of the past. Much effort ahead is needed to ensure that the evolution of dental hygiene continues to that of a highly visible and valued member of the health care professions. 🌸

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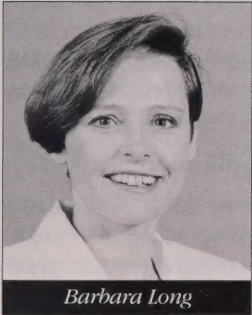
Editor's note:

At present the Health Disciplines Act is in second reading at Queen's Park, Toronto. Third and final reading is expected in 1992.

Planing the Surface

Dental Hygiene Profile

The Gracey "Curvettes"
— their design and development —



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Introduction

Over several years I have successfully taken an idea and, through collaboration with a dental instrument manufacturing company, created a new series of dental instruments called the Gracey Curvettes.

I have been a practicing dental hygienist and instructor with the College of Dentistry, University of Saskatchewan for the past 11 years. I have treated many patients using the existing Gracey curets and have instructed the proper usage of the instruments to dental students. I have used the Gracey curet series to instrument the root surfaces of anterior teeth because they were the most suitable of the available armamentarium for the narrow subgingival surfaces. The Gracey curet series performed satisfactorily, however, the effectiveness of the Gracey curets is diminished substantially when working in periodontal pockets greater than 4mm. The deeper the pocket, the narrower the tooth surface resulting in inefficient root planing and unnecessary discomfort for the patient because of an oversized working end.

A new root planing instrument, the Gracey Curvette series was developed to satisfy this requirement. A patent application was completed. One specific Gracey Curvette, the Sub-0, was compared with the existing Gracey curet 1/2 in a study of root surface coverage at the College of Dentistry, University of Saskatchewan.

Instrument Development

The Gracey curet series of periodontal instruments have been in use for nearly half a century. Their application is taught at many dental hygiene educational institutions and many dental facilities. When instructing students in the use of the Gracey curets, it is noted that only the end third of the blade (the toe) is to contact the tooth surface. If the end third were designed to contact the tooth with the rest of the instrument

following behind, then the instrument is too long to go around the line-angles of the teeth and much too long for adaptation to labial and lingual surfaces of mandibular anterior teeth.

This is the most obvious shortcoming of the Gracey series. Another design deficiency is noted, when using the curets on anterior teeth; the angle of the blade to the shank. This angle makes it virtually impossible to root plane the narrow, deep pockets and maintain the basic principles of instrumentation; a perplexing paradox! After teaching the dental students the principles of instrumentation and proper instrument techniques (Pattison and Pattison, *Glickman's Clinical Periodontology*, 7th Edition, 1990 W.B.Saunders Company, pages 614-643) in the lab sessions, they could not be applied in the clinic. Students have extreme difficulty in maintaining the terminal shank parallel to the long axis of the tooth when instrumenting the labial and lingual surfaces of mandibular anterior teeth.

I queried the existing market and concluded that the Gracey curet series were the best I could expect.

It was early in my career that I first had the idea of designing a dental instrument specifically for the smaller and narrower root surfaces of anterior teeth. It took several years to see a completed product.

Curvette Design

While reviewing instrument catalogues, it became apparent that many instruments have been modified and designed for the restorative field but very few for fine root-planing and scaling.

Initially I modified the Gracey 5/6 by bending the blade and honing the end with a stone. It was tested intra-orally and the design change seemed feasible. Investigation at the University of Saskatchewan engineering college, to prototype an instrument, proved unsuccessful. It's a complex process. The metal in the instrument blade and handle must be tempered and treated to withstand the high temperatures of heat-sterilization and must hold an edge when sharpened. Production of a model seemed unattainable until I contacted the G. C. American Dental Company.

American Dental has an instrument design group interested and willing to prototype instruments upon request. Through American Dental, and after three major modifications, we developed the Gracey Curvette Sub-0. The modifications were based on the traditional Gracey curet 5/6. This instrument was used because the length of the terminal shank was best suited for narrow subgingival root surfaces.

The initial modification was to shorten the blade length by one-half. This in itself made instrumentation easier but the design still required more work. After the deposits were loosened they tended to slip off the tip of the instrument and were difficult to remove from the sulcus.

Next the radius of curvature of the blade was decreased resulting in the toe of the blade tipping up to facilitate deposit removal; effectively producing a pseudo-spoon. This allevi-

surfaces in periodontal pockets over 4 mm. A natural progression was to mount this small curved blade on the posterior handles. This enabled the small curved blade to be more easily adapted to the root surfaces where they furcate.

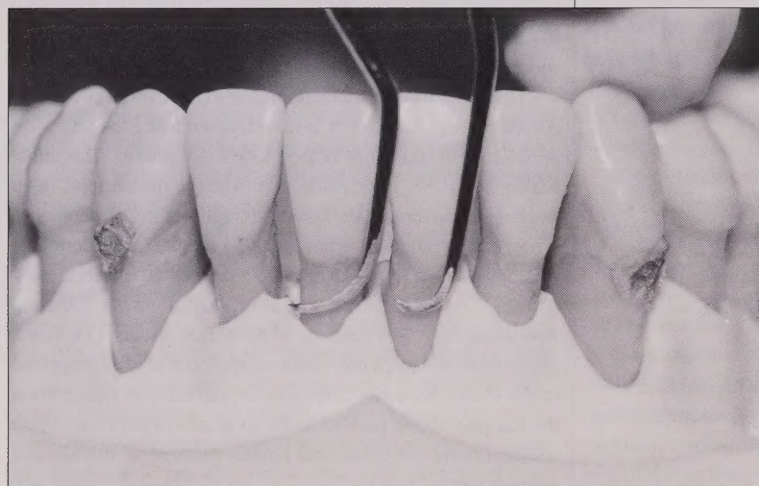
An additional feature of the posterior instruments is a banding system on the instrument handles. A single band and a double band indicates the 11/12 and the 13/14 instruments, respectively. These bands enable the operator to readily distinguish between the instruments on the tray without having to focus on the small numbers imprinted on the handles or to identify the instrument by the shank angles.

Patent Application

Prior to sending the instrument idea to the G.C. American Dental Company I contacted a patent attorney to inquire about idea and design protection. An American attorney was contacted because the instrument was to be manufactured in the United States. The patent attorney recommended documentation of the instrument by having a written description complete with a diagram. Two reputable professors from the college witnessed the document and dated it. The original docu-

ment was retained and a copy sent to the attorney for his files.

Several problems arise when patenting an item. Proof must be available of the uniqueness and originality of the idea. The patent must be defended from infringement by whomever holds the patent, which can be a very expensive and lengthy process. This is the most difficult problem. Even the company



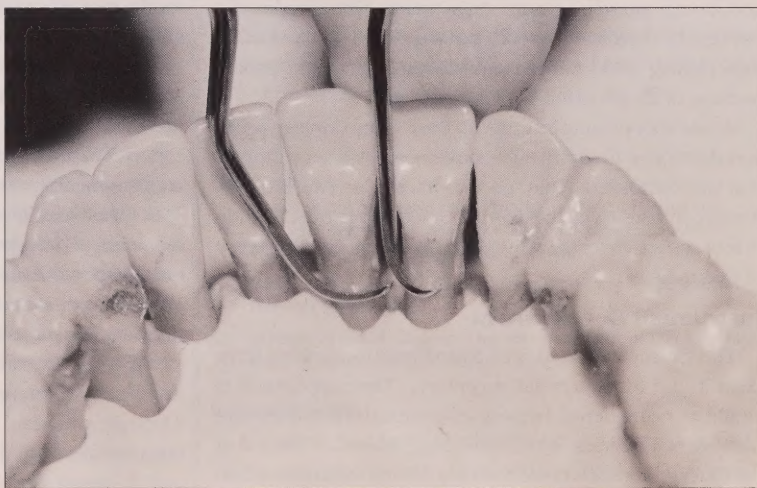
Labial Adaptation

ated the problem of the deposit slipping off the instrument blade. Tipping up the toe-end of the blade also resulted in a better fit in the sulcus on the small surfaces it was designed to be used on.

The third modification was to orientate the blade base at right angles to the terminal shank rather than slanted down like the Gracey curets. The straightened shank made insertion into the sulcus easier and the terminal shank could now be adapted parallel to the long axis of the anterior teeth to follow the conventional principles of instrumentation.

The combination of the straightened terminal shank and decreased radius of curvature made instrumentation on the smaller root surfaces much easier. With the new instrument, one doesn't lean the instrument away from the long axis of the tooth as one does with the Gracey curets.

The third prototype was acceptable. In use in my practice, I was reaching for it more and more often. As it became part of my routine tray set-up, I found it useful for posterior teeth as well, especially on the buccal and lingual



Lingual Adaptation

producing the product may not want to go to the expense of defending a patent.

A patent search was initiated. This is a search of all existing patents to see if there are any similar instruments patented. The search did not uncover any similar patents so we proceeded with the application.

It was necessary for the attorney to be made aware of, and understand, the dental terminology and principles of periodontal instrumentation in order to prepare the application. The differences between the prior art (the existing armamentarium) and the "new" instrument were vital to the patent application and had to be clearly stated. The application included illustrations and a brief technical description of the instrument and its utility.

The application was completed and filed under my name, Barbara Long, in early 1990. After filing, patent pending status applies, meaning the patent must be examined and may require several revisions prior to approval

or rejection.

Gracey "Curvettes" is the registered trademark of the G.C. American Dental Company. These instruments are currently available through them direct, or from a dental supply company that handles G.C. American Dental products. 

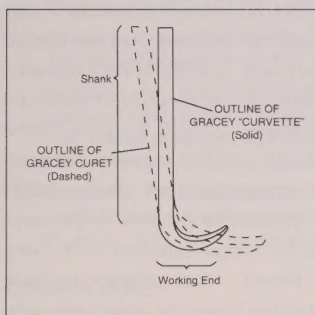


Figure 1: Comparison of Gracey "Curvette" to Gracey Curet

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UNIVERSITY of SASKATCHEWAN RESEARCH PROJECT

An evaluation of the effectiveness of the Gracey "Curvette" Sub-O for subgingival root planning of the anterior teeth.

A project was funded by the College of Dentistry's Dean's Medical Research Council Grant at the University of Saskatchewan. It was undertaken to determine a method of testing the effectiveness of the Gracey "Curvettes", to contact root surfaces. The anterior Sub-O instrument was used and compared with the Gracey 1/2 curet. In reviewing the literature few comparisons of the effectiveness of hand instruments used for subgingival scaling and root planing were found. Research, however, describes the difficulty and skill involved in adequately scaling and root planing the teeth and also indicates that difficulty in instrumentation increases as probing depths increase. The majority of comparisons in the literature are of hand-scaling versus ultrasonic/sonic-scaling or of hand-scaling with, or without, follow-up periodontal surgery.

The purpose of the study was to compare the effectiveness of the Gracey "Curvette" Sub-O with the Gracey curet 1/2 in its ability to efficiently contact the roots of central and lateral incisors. Comparisons were made using an *in vitro* method.

Dentiform teeth, with the roots covered in oil-base paint to identify the surface contacted by the instruments, were mounted in mannequins and covered by artificial gingiva. Two groups of dental hygiene students were instructed to undertake thorough root planing of incisors in a specified time-frame (three minutes per tooth). Each set of teeth was collected and compared based on the amount of coloured material removed on the exposed root surfaces. An Image Analysing System utilizing a video camera was used to photograph the root surface of each tooth, and an existing computer program modified to determine the extent of coloured material removed.

Charging the Surface

Electronic Dental Anaesthesia

— A summary of information from articles reviewed
by the West Coast Literature Review Club —

Electronic dental anaesthesia (EDA), sometimes known as TENS (transcutaneous electronic nerve stimulation), is a form of peripheral nerve stimulation. The EDA unit interrupts the pain signal during application of an electric current. The electric current is delivered via adhesive electrodes placed in the vicinity of the pain or operative site. Three theories of the mode of action of EDA are:

1. The Gate-Control Theory (Melzack and Wall): Larger beta fibres which transmit the sense of touch are stimulated, thus blocking the slower moving pain fibres (A delta and C fibres).
2. Endogenous Opiates and Enkephalins may be released by TENS stimulation. These natural opiates decrease pain sensation with a morphine-like effect.
3. Sensory "noise" is caused by TENS stimulation, scrambling pain perception.

The sensation for the patient is that of "tingling", like that of champagne bubbles.

The psychological make-up of the patient is important when deciding which patients will be treated using EDA. Individuals must be evaluated considering the "neurophysiological whole". Patients that are mildly fearful, or needle-phobic, may be offered EDA as a safe alternative to local anaesthetic. EDA can be used as an adjunct to conventional pain control, or where local anaesthetic is contra-indicated. The effectiveness of EDA varies with patient fear and apprehension. Relaxation or using nitrous oxide with EDA may increase success rate. There is some indication that a placebo effect may occur when using EDA.

At present, EDA has broader uses in medicine. Although relatively new in dentistry, it has had limited success in the control of chronic pain syndromes such as myofascial pain dysfunction, facial neuralgia and TMJ syndrome. EDA has been used for other dental procedures such as scaling and root planing, cavity preparation, crown preparation, and selected tooth extraction. Several studies reported EDA to be least successful during endodontic procedures.

Indications

EDA is useful for many patients as an adjunct to conventional pain control. Currents utilized are safe, reliable, non-invasive and controlled by the operator and the patient. The

EDA has also passed the scrutiny of the U.S. Food and Drug Administration. Indications for its use in dentistry include patients with local anaesthetic allergies, haemophiliacs, or needle phobics. Undesirable side effects such as toxic local anaesthetic reactions, operative numbness and inadvertent post-operative soft tissue trauma are avoided with the application of EDA. It is also documented that post-operative pain is less when the EDA is utilized.

Contra-indications

The use of EDA is not suitable for all patients. In patients with cardiac pacemakers, EDA is contra-indicated as it may cause dysrhythmias. It should not be used over the carotid sinuses for hypotension may result. It is also contra-indicated in patients with pregnancy because the effects of TENS on the fetus have not been fully explored. As well, it should not be used in cases of cerebral vascular accident, transient ischemia, epilepsy, nor for the "incompetent patient". Since certain types of wavelengths may increase blood flow to the areas being pulsed, EDA would be contra-indicated in an area where dry hemostasis is desired. The patient's age is a consideration and these upper and lower age limits depend on his/her ability to understand the concept involved. Patients in advanced stages of cancer may not be suitable candidates because TENS may negate the pain-controlling effects of the therapeutic drugs these patients may be taking.

Implications for the dental hygienist

EDA may be a useful method of pain control especially for dental hygienists not licensed to administer local anaesthetic. Because it is a safe, simple and non-invasive procedure, EDA is easy to administer. It provides a pain-controlling option to patients who decline the use of local anaesthetic, or on occasions when local anaesthetics are not available.

EDA may be less successful on a patient with prominent exostoses, as the electrodes often do not remain in position. The electrodes can become displaced/dislodged, or slide on the tissues—and this causes a "break" in the current. The electrodes must remain in the proper position to effectively produce pain control.

The clinician must remain present with the patient to periodically increase the pulse frequency, thereby taking more time than administering local anaesthetic. In most cases, it takes approximately ten minutes to achieve a level of comfort before treatment can begin.

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Editor's note:

Ms. Keselyak would be pleased to receive calls, or letters, from those of you interested in starting such a study club. Please direct all correspondence to:

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History of the West Coast Literature Review Study Club

One of the mandates of the BCDHA Continuing Education Committee is to encourage membership in study clubs. As members of this committee, we felt it was important to have first-hand experience organizing and participating in a study group. The West Coast Literature Review Study Club was founded in September 1990, to review the current literature on chosen topics related to dental hygiene and dentistry in order to update our knowledge and keep abreast of new developments in our profession. Decisions of the club included:

- meetings every second month for three hours
- in teams of three, topics would be researched, and the ten most current articles would be copied and sent to each member for review
- at each session, abstracts would be presented and articles reviewed

We have found that consensus-forming is an important step. Therefore at the conclusion of each topic, we summarize the literature and discuss the implications of the research to the practice of dental hygiene.

Members: Nancy Keselyak, RDH, MA - Mentor
Allison Addems, RDH, BSc
Tracey Bruce, RDH
Shelly Chaisson, CDA, RDH
Shannon Craigie-Halkett, RDH
Judy Dekerf, BA, RDH
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Self-Assessment Test

“The mouth has been described as a mirrored surface, reflecting the health of the body.”



Can you read these reflections in the questions below?

- 1) What effect does chronic and/or acute malnutrition have on the oral environment?
- 2) What are the effects of malnutrition on fluoride uptake?
- 3) How are the oral surfaces diversified to equip them for their specific functions?
- 4) What are Langerhans cells and how do they contribute to the protective system of the oral mucosa?
- 5) What is the magnified risk in patients, using smokeless tobacco, who also harbour the herpes simplex virus (HSV)?
- 6) What is the incidence of fatality in oral cancer?

- 1) There is evidence that malnutrition promotes differential overgrowth of certain oral pathogenic bacteria such as *Streptococcus mutans* and gram negative organisms. There is documentation that malnutrition, in the first year of life, is a cause for delayed eruption and a rate of caries seven times greater than that of normal children. In less severe levels of malnutrition enamel developmental defects have been noted.
- 2) Fluoride incorporation in mineralized tissues and fluoride excretion are affected by the quality and quantity of foods in the diet. Poor nutritional status may increase the risk of fluorosis.
- 3) Areas subject to the stresses of chewing consist of a layer of epithelial cells rich in keratin, a hard insoluble protein. This surface layer is tightly bound to the underlying tissues. In regions of the mouth that are stretched by the movements of the jaws and tongue, the oral epithelium has a nonkeratinized surface and is flexibly attached to structures underneath.
- 4) Langerhans cells act as the peripheral arm of the immune system. They respond to the initial presence of antigens and toxins entering the oral epithelium and provide an early warning signal.
- 5) HSV has been suggested as a cofactor in the development of oral cancers associated with the use of smokeless tobacco.
- 6) Approximately 1/3 of diagnosed oral cancers end in death. This, in part, may be due to the fact that the drugs and radiation therapies used to attack cancer cells, elsewhere in the body, can damage 'rapid-turnover tissues' like the oral mucosa.

Scientific Updates et cetera

Calcium sources

Cottage cheese is only a modest source of calcium, supplying just 60-70 milligrams in half a cup, (and dry curd has only half as much), reports the *University of California* (Berkeley), *Wellness Letter*.

In contrast, half a cup of yogurt has about 200 milligrams, and one ounce of most hard cheeses between 150-200 milligrams.

Cottage cheese retains just 25 to 50 per cent of the calcium in milk it's made from, since in the curdling process, much of the calcium remains in the whey, which is drained off. 🐄

Chocolate milk myth

Myth: The cocoa interferes with the body's ability to absorb calcium.

Reality: although oxalate, found in cocoa, can bind to calcium and render the mineral unusable in the body, the amount of oxalate in chocolate-flavoured milk is not enough to significantly interfere with calcium absorption. A study of chocolate milk, whole milk and yogurt found that calcium from all were absorbed equally. (Reported in *Tufts University Diet & Nutrition Letter*). 🐄

Cut sugar consumption

Two major reports providing quantified advice on healthy eating both contain a radical new element — they both recommend that refined sugars should account for no more than 10 per cent of our total (calorie) intake.

The new reports, one from the World Health Organization (WHO), and the other from the United Kingdom Government, are authoritative scientific statements on nutrition which have wide implications for the general public, food industries, advertisers, and health professionals, according to an article in *FDI News*.

The WHO's *Diet, Nutrition, and the Prevention of Chronic Diseases*, sets acceptable ranges for the major nutrients, including the target of 0-10 per cent of energy from refined sugars.

The UK Government Report, *Dietary Reference Values*, is the first time the UK Government has issued a comprehensive set of quantified dietary recommendations. Some targets have existed before, but the most important new goal is that refined sugars should provide no more than 10 per cent of food energy. For Britain, this would mean reducing average sugar consumption by about 50 per cent. 🐄

Dental Amalgam

The U.S. Food and Drug Administration (FDA) in a statement issued March 20, 1991, advised consumers not to seek removal of dental amalgam.

The FDA's summary, issued as a "Talk Paper" included a recommendation for more research on amalgam safety and said the agency will decide soon how to initiate the recommended research.

"In the meantime, the FDA does not advise that individuals ask dentists to remove their amalgams," the statement said.

The agency found "no valid data to demonstrate clinical harm to patients from amalgams or that having them removed will prevent adverse health effects or reverse the course of existing diseases."

Meanwhile in Canada, the Canadian Dental Association recently granted \$10,000 to the Canadian Fund for Dental Education, to be awarded in partial support of a research study on mercury in dental amalgam. Faculties of Dentistry at Canadian Universities were invited to submit research proposals — Dr. Derek Jones and colleagues at Dalhousie University in Nova Scotia have been awarded this grant.

CDA, while encouraging further research, finds no foundation for discontinuing the use of dental amalgam at this time, and reaffirms its existing position approved by the Canadian Dental Association Board of Governors in 1986:

"Current research on the use of silver dental amalgam suggests that amalgam continues to demonstrate clear advantages in many applications over other restorative materials. Significant evidence of patient risk associated with its use has not been demonstrated. Most therapeutic materials involve potential side effects or risks as well as benefits and dentists are trained to be on their guard for these reactions at all times." 🐄

Diagnostic X-rays

Diagnostic X-rays do not appear to be major causes of leukemia and other cancers, according to a study published in the March 13, 1991, *Journal of the American Medical Association*.

The authors studied exposure to diagnostic X-rays and the relative risks of leukemia, non-Hodgkin's lymphoma (NHL) and multiple myeloma. They abstracted more than 25,000 X-ray procedures from medical records of adult patients.

The study had 565 patients with leukemia, 318 patients with NHL and 208 patients with multiple myeloma. These were matched to 1,390 control patients.

"X-ray exposure was not associated with chronic lymphocytic leukemia, one of the few malignant conditions never linked to radiation, they write. "For all other forms of leukemia combined (358 patients), there was a slight elevation of risk but no evidence of dose-response relationship when X-ray procedures near the time of diagnosis were excluded."

The authors caution that the potential hazards from radiologic examinations should be weighed against the medical benefits.

They write that nearly 90 per cent of the total collective dose to the populations from man-made sources comes from diagnostic X-rays. They encourage the judicious use of radiologic examinations and the elimination of non-productive procedures. 🐼

Improving needle design could prevent injuries

Needlestick injuries have long been a stressful fact of life for health care workers. Some specialists believe the prevention of needlestick injuries is primarily an engineering problem.

Janine Jagger, PhD, an epidemiologist and injury prevention specialist at the University of Virginia at Charlottesville, says "90 per cent of needle injuries can be prevented by product design."

In an article in *Interface*, newsletter of the American Association of Hospital Dentists, Jagger maintains that current needle designs are inherently hazardous, although the technology exists today to design needles for safety.

According to Jagger, the ideal needle design would eliminate the vagaries of human behaviour and incorporate safety features in an entirely passive manner.

One common approach has been the sliding sleeve mechanism, marketed by at least two manufacturers. A protective sleeve is attached to the plastic barrel of the syringe and can be pushed down over the exposed needle both before and after it comes in contact with the patient.

Other approaches are currently being investigated; external protection, including sliding sleeves; internal protection; and "disappearing needles", which retract up into the barrel of a syringe or holder.

Although these devices commonly cost more than conventional products, the designers argue that the increased cost might be more than balanced by the savings associated with fewer needlesticks, which could result in po-

tential liability savings. They argue further that with proper investment in retooling, marketing and distribution, protected needles would become competitive in price. 🐼

Medical gloves

The Health Protection Branch (HPB), of Health and Welfare Canada, recommends the purchase of Canadian General Standards Board (CGSB)-certified medical gloves if one is looking for assurance of good quality. The CGSB program, however, is not yet mandatory for manufacturers. For further information about the HPB guidelines contact Andrew Douglas, Bureau of Radiation and Medical Devices, Health Protection Branch, Ottawa, Ont. K1A 0L2; and for details on the CGSB program, David Young, Canadian General Standards Board, Qualification and Certification Listing Branch, Ottawa, Ont. K1A 1G6 🐼.

Gum chewing

A recent study by two University of Manitoba dentistry researchers shows that chewing gum may help reduce cavities by at least tripling normal saliva flow, which neutralizes acid in plaque, flushes out food particles from the mouth, and recalcifies teeth.

With a grant from the Wrigley Corporation, and a group of 24 student "chewers", Dr. Colin Dawes, a world authority on saliva, and Dr. Lorna Macpherson tested the effect on saliva flow of seven brands of sugared and sugarless Wrigley gums. It was the first experiment to examine the effect of gum chewing on saliva production over an extended time span.

In nine 20-minute tests, they found that in the first minute of chewing gum, flow increased by as much as 12 times the normal rate. The flow subsided halfway into the experiment, but was still triple the normal rate for the remainder of the test.

The chewing gum not only stimulated the flow of saliva but changed its

composition so that it became more alkaline, due to high levels of bicarbonate (baking soda), which helps to neutralize or buffer decay-causing acid in plaque.

Dawes found flow differences between flavoured and unflavoured gums. In the first minute of chewing, flavoured varieties stimulated the salivary glands to secrete more than twice as much saliva as did an unflavoured gum base. Once the flavour vanished (usually in 10 minutes), the flow rates for both types of gum stabilized at 3 times the normal rate.

While chewing flavoured gum may boost saliva flow, in sugared brands the sugar is converted by bacteria into decay-causing acid. Sugarless gums are made with artificial sweetening agents which cannot be converted into acid.

"What's unknown about sugared gum is whether the increase in salivary flow and bicarbonate is sufficient to neutralize the effects of the sugar. But we can safely conclude that chewing sugarless gum is probably beneficial to oral health."

Dawes and Macpherson also tested two peppermint breath fresheners which were found less potent in stimulating salivary flow than gum. 🐼

UCSF researchers develop synthetic collagen

Researchers at the University of California, San Francisco, have identified and synthesized a tiny segment of the collagen molecule that regulates how and where cells grow, paving the way for development of materials to improve wound healing, bone and tissue repair, and artificial organ implants.

Rajendra S. Bhatnagar, PhD, a UCSF biochemist and professor of stomatology, and a team of researchers in the UCSF School of Dentistry searched the long chains of amino acids that make up the collagen molecule to locate the single segment that regulates cell growth.

Bhatnagar and the UCSF research team found a 15-amino-acid segment

that acts as the cell binding domain amid the three intertwined 1,200-amino-acid chains that make up the collagen molecule. They named the segment Peptide-15, or P-15. The findings were reported at the 69th general meeting of the International Association for Dental Research in April.

Because this segment of collagen can be synthesized in the laboratory, the finding represents an opportunity to develop artificial materials which will encourage natural tissue growth, Bhatnagar said.

Composite materials containing synthetic collagen would allow dentists and physicians to restore damaged tissue such as a wound. By placing the material on the wound, cells in the surrounding tissue would readily migrate into the material as they encountered the synthetic collagen, he said.

In dentistry, the material might be used to help repair oral lesions or replace tissue lost as a result of gum disease, Bhatnagar said. 🐾

Nutty Toothpaste

Researchers have discovered that compounds in cashews kill bacteria that cause tooth decay. The compounds, extracted from the oil in the cashew shell, also fight plaque.

"Don't be surprised if a nut-flavoured toothpaste makes its way to the drugstore shelf sometime this decade," *Science News* reports. "The cashew represents a renewable resource and potentially important product from tropical forests." 🐾



Bruce Polson

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—Part three of a series—

Long-Term Disability

Your greatest asset is your earning power. It makes possible both the necessities and the luxuries of life. It is the key to the way of life you have worked hard for and enjoy. What if a disabling illness or injury prevented you from working for a prolonged period of time? How much earning power would be lost? How would it effect your way of life?

The risk of disability is real. Statistics show that out of 1,000 people, the number who will suffer a long-term disability (three months or longer) before the age of 65 is one out of two for people aged 25 to 35, and four out of nine for those aged 35 to 45.

In your opinion, do you feel it makes sense to protect this most valuable asset?

The CDHA endorses two specific plans for its members. One is offered by Mutual of Omaha, and the other is provided through the Citadel Assurance Company. Both of these carriers have an excellent reputation as providers of long-term disability. More details on these programs will be given in a future article.

While it is outside the scope of this series to provide individual advice concerning which plan is best suited to your particular needs, if you are thinking of buying some disability coverage, here are some basic principles worth looking for and considering carefully.

What is disability?

The most important item to look for when trying to decide which policy is right for you, is the definition of disability. Disability means the inability to do all the duties of your job (insurers call this "own occupation"). Some policies provide certain time limits. For example, a policy could stipulate that it will pay you for the first 2 years that you are unable to do your own job, and then changes the definition of disability to mean the inability to do any job that you are qualified to do because of your background, education or training. Other policies provide that they will pay you for so long as you are unable to perform the duties of your job or until you reach age 65, whichever is first. A good rule of thumb is that the longer the policy states that it will pay, the more expensive it will prove.

How much does disability coverage cost?

Most disability policies are written to cover a specific amount of benefit that relates to your salary. The way that you pay for this coverage is through a premium. The premium can be a level premium so that it does not change over the years, or it can be step-rated. This means that premiums will increase as you become older. The amount of premium that you pay

depends on a number of factors such as your age, the amount of coverage that you buy, and whether you have chosen any enhancements over the basic coverage (for example, Inflation Protection). This premium can be paid annually or monthly depending on the mode of payment chosen.

What enhancements are available?

Over and above the basic salary coverage, insurers provide many enhancements. Some of the most important ones are Inflation Protection, Partial Disability, and Waiver of Premium. An **Inflation Protection** enhancement provides you with a benefit that will increase with the change in the consumer price index. This can be very important especially if you are disabled for a long period. **Partial Disability** means that if you are able to return on a part-time basis, or cannot earn as much as you could before, the disability benefit will continue to pay you the difference between what you made and what you are now making. **Waiver of Premium** means that if you become disabled, you do not have to continue to pay premium for the coverage after a certain period of time (usually 3 to 6 months).

What is meant by an Elimination Period?

Elimination Period refers to the amount of time that you have to be disabled and unable to work before the disability plan will provide benefits. There are many different waiting periods available, from 15 to 365 days. Generally, the shorter the waiting period, the higher the cost.

What is not covered by disability coverage?

There are a number of circumstances that exclude any benefits being paid under a disability policy. Such situations that would not qualify for the coverage are injuries sustained through acts of war or through Military Service, or attempted suicide. In addition, the coverage does not pay for disabilities due to normal pregnancy or childbirth; however, insurers will provide benefits for disability caused by complications arising from either of these conditions. ☺

CDHA Insurance Program

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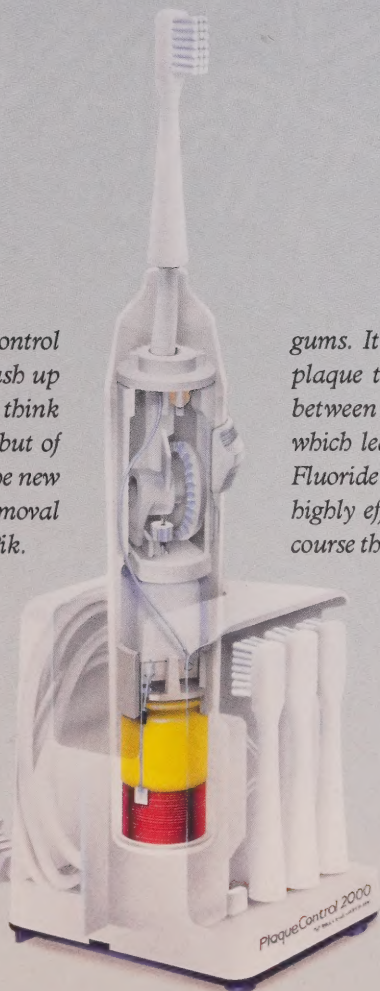


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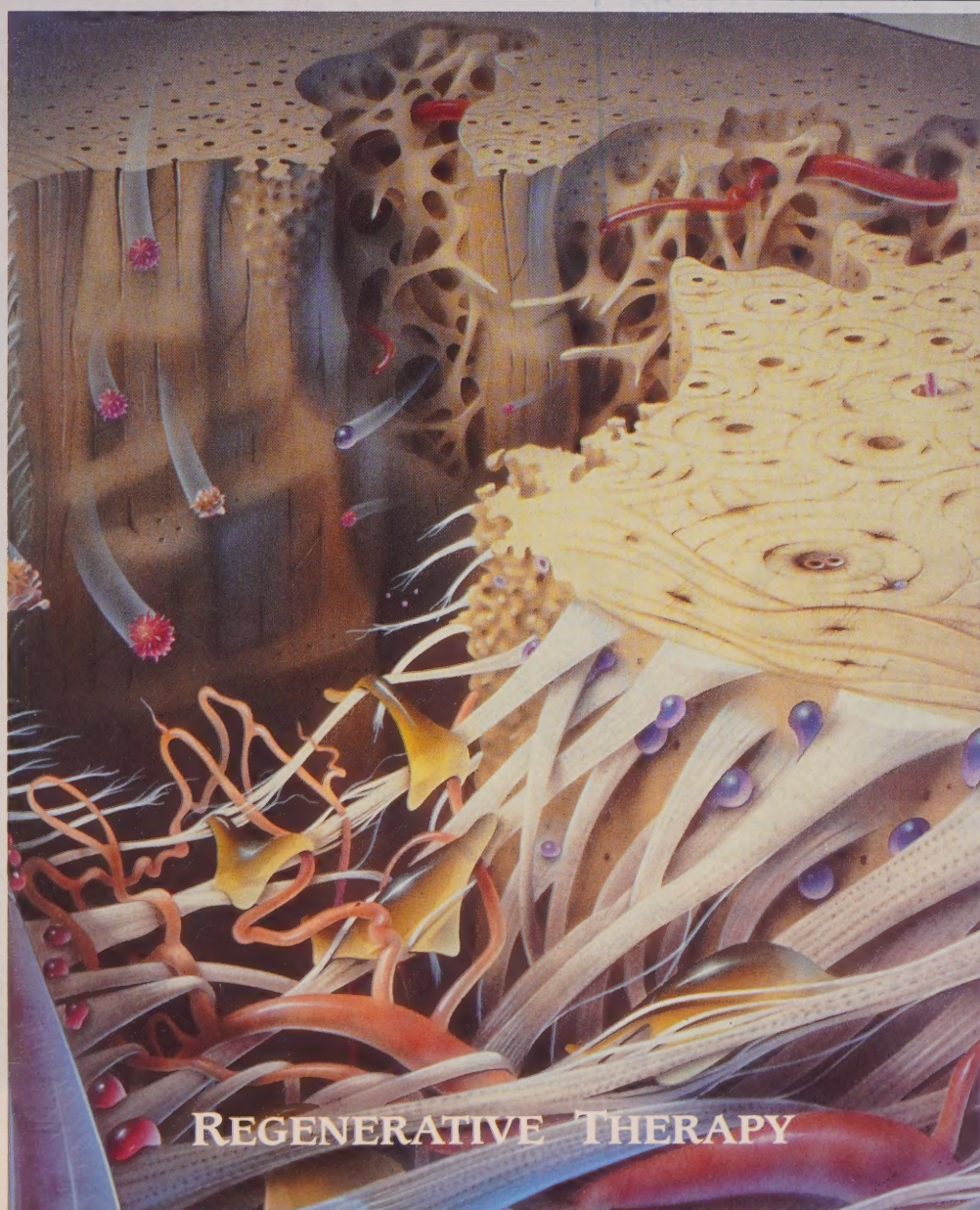
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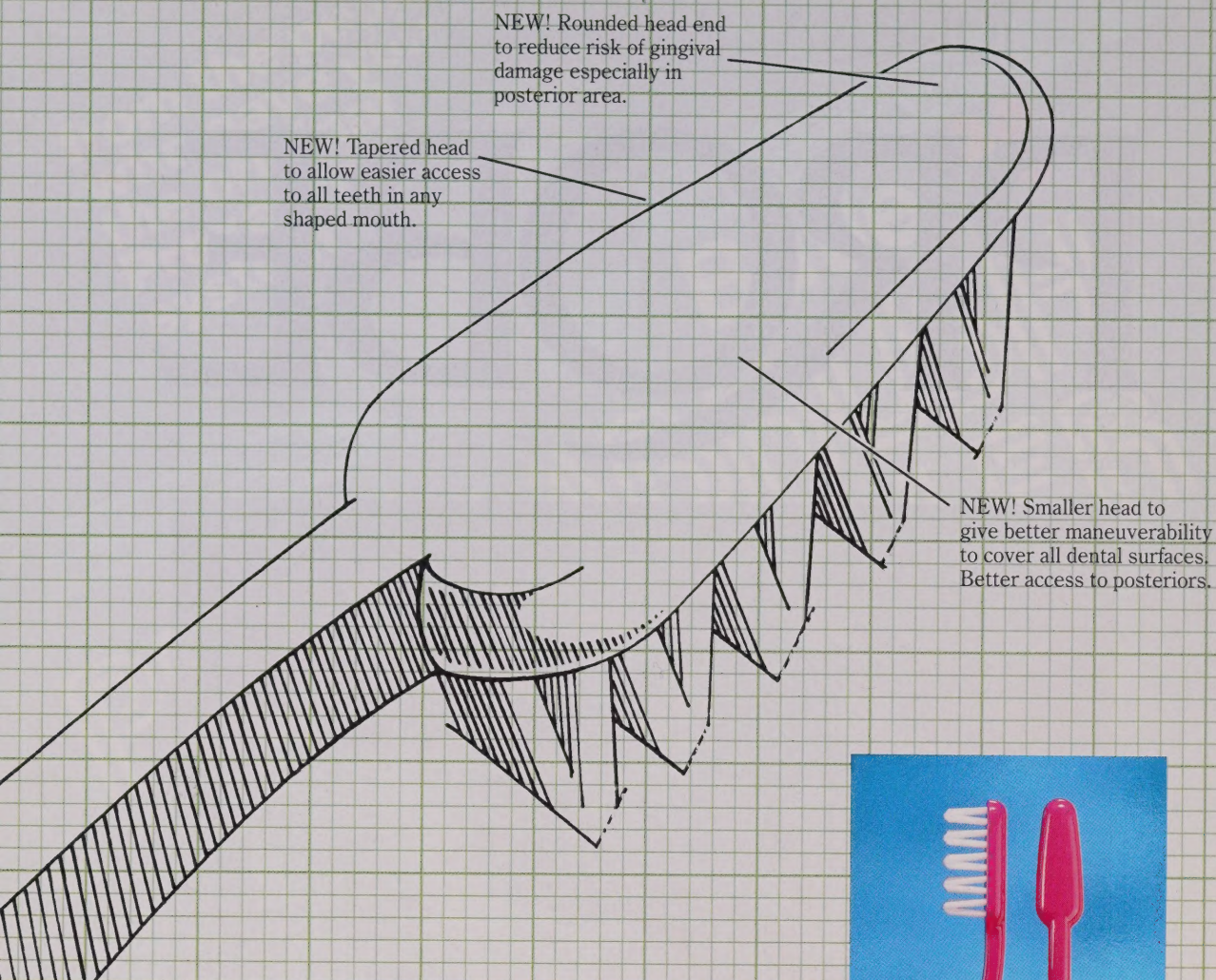


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Winter 1991 hiver



REGENERATIVE THERAPY

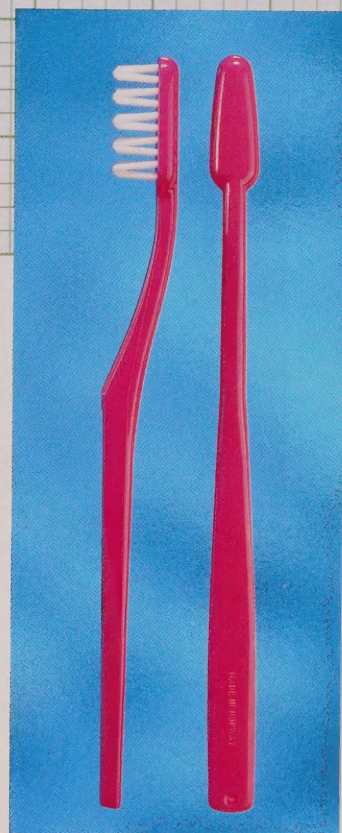


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President's Message

How Many Are Enough?



Terry Mitchell

Recently there have been a number of conflicting events and statements across the country concerning the number of dental hygienists in the work-force. Schools of Dental Hygiene have been closed, while others have opened or increased their enrolment. There are advertisements for dental hygiene positions in some parts of the country, while in other geographical locations, new graduates and dental hygienists returning to the work-force are unable to find positions. There are even areas where dental hygienists are being laid off! How many hygienists are enough?

Answering this question involves exploring a complex set of factors. As the majority of dental hygienists are employed in private practice, the employment situation of dental hygienists may depend on the location of a dental office and the ability of that office to sustain a full- or part-time hygiene position. Most dental offices are located in urban areas, and many

dental hygienists stay in urban areas due to family commitments. Dental practices in rural localities often wish to employ a dental hygienist but claim they are unable to attract someone or they can only offer part-time. Part-time may not provide enough income and there may not be another opening in the vicinity to complement the offer. Perhaps there is full-time employment but the area is too remote. Should dental hygienists be "forced" to move to isolated areas to find employment? This tactic has been unsuccessful with other professional groups. Consider the dental hygienists whose partner is employed in a particular locality but there is no dental hygiene position available. How does this family resolve the employment problem?

The Dental Hygiene Profession recognizes that there are a number of unmet needs in many communities. — Forget for a moment the role provincial regulations might play in meeting these needs. — How can communities encourage dental hygienists to accept a position that might be very different from traditional private practice? For the most part, dental hygiene schools educate for traditional settings. Yes, the students are taught about alternative practice settings. They are also taught about community oral health principles and practices, yet the main focus is still private practice. It takes a special personality to "blaze new trails"! Certainly as the applicant pool to dental hygiene evolves further, more graduates may be inclined to explore alternatives. The opportunities will be quite exciting, but, those possibilities are yet unopened. How can dental hygienists be encouraged to open new doors?

Organized dentistry seems to feel there are not enough dental hygienists. Why is that so? Information at this point is anecdotal. Unfortunately, if dentists report that they "can't find a dental hygienist" there is no indication of why that is occurring. Is it the salary offered? Is it the benefits, or lack of? Is it the infection control practices of that office? It is sad to report that this has been cited as the number one reason for dental hygienists in the United States leaving the work-force (ADHA Survey). Is it the expectations of the employer? Is it a possible clash of personalities? Is it that the position available has not been widely advertised?

How can we predict the number of dental hygienists needed in Canada? How should dental hygiene school enrolments be decided? Currently we can predict the number of graduates from Canadian schools in any given year, but we also know that there are Canadians studying in the USA who will return to Canada to practise. We know from the 1987 survey conducted by Patricia Johnson that the attrition rate among dental hygienists is very low. We expect the variety of employment settings to expand. How can we determine society's needs?

Obviously there are a number of factors to be considered. It is important that decisions concerning the increase or decrease in dental hygiene school enrolment be based on sound information gathered from as many sources as appropriate. Gathering this information will be difficult given the complexity of the issue. Our Practice and Regulation Council is beginning to wrestle with the questions. I encourage you to send comments and suggestions to CDHA as we try to answer "How Many Are Enough?" ☛



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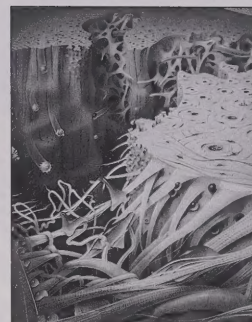
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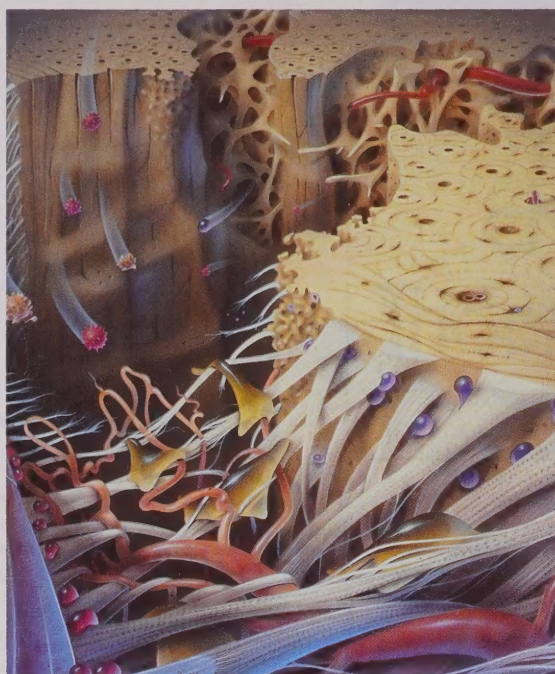
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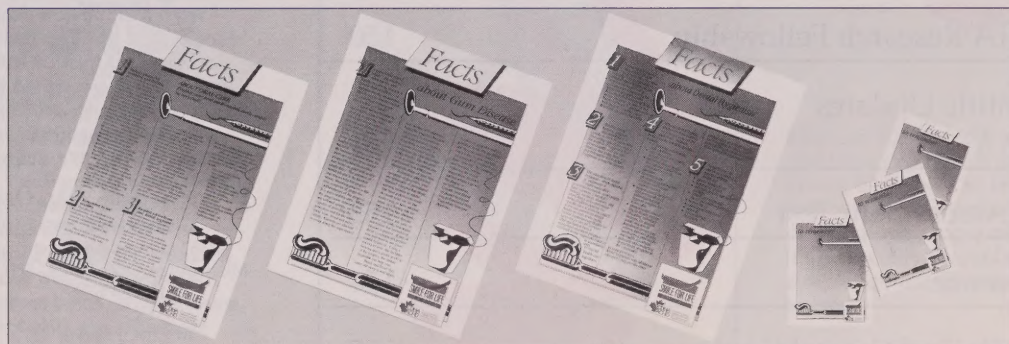
The Canadian Dental Hygienists Association Journal: Probe is the official publication of CDHA. CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to Probe do not necessarily represent the views of the CDHA, nor can CDHA guarantee the authenticity of the reported research. Copyright 1986. All materials subject to this copyright may be photographed for the non-commercial purpose of scientific or educational achievement.



On the cover:

This is an artist's conception of the biological process of regeneration. Periodontal disease has caused destruction of the periodontal ligament fibres and the bone next to the tooth. Now wound healing cells such as macrophages, monocytes, and polymorphonuclear leukocytes can be seen entering the defect area. Blood vessels are re-establishing vascularity in the area, and new bone, periodontal ligament fibres, and cementum are beginning to form. Fibroblasts can be seen in the periodontal ligament, osteoblasts adjacent to the bone, and cemento-blasts adjacent to the cementum.

CDHA would like to thank Gore Regenerative Technologies, a division of W.L. Gore & Associates, for very kindly contributing this issue's cover taken from a specially commissioned series of work by artist Keith Kasnot.



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Viewing the Horizon



Marilyn Goulding

Here I sit, some 37,000 feet above Moose Jaw, returning from sunny?!!! Vancouver and the American Academy of Periodontology's conference. This long flight home has offered me ample time to reflect on what and whom I saw, the things I heard, and the knowledge and impressions I brought away.

Although we are a profession, dentistry doesn't differ largely from industry in that trends sweep in and dominate the scene from time to time. I like to see this excitement and I like the boom it brings to research and the expansion of the knowledge base. Conversely, trends can begin to move forward solely on their own momentum and you may find yourself in the middle of a stampede. Such is the case in the field of implants. Never have there been so many courses, papers, opinions and exhibits all buzzing about this rapidly expanding field.

Now, taxiing in to the concourse, safely back on earth I feel that dentistry too needs to come back to earth. The truth is, that implants, even with all

their super-tech development, attest to the grim fact of our failure to identify, treat, arrest, and monitor dental disease. Our patients are still losing teeth. Why are we so excited about the overwhelming evidence of our defeat? Will creating the bionic mouth negate the original problem or revive it in a new form? Will we now deal with our newly restored patient and his "peri-implantitis"?

Back in the terminal, waiting at the revolving carousel, I realize that we can't leave our dental baggage behind. Our main focus still needs to be identifying and treating the disease, seeking alternatives and rationale for those that don't respond to traditional therapy, restoring the resultant damage and maintaining the patient while monitoring for new sites of destruction.

This issue of *Probe* deals with this dilemma of restoring the damage and providing maintainable osseous environment. Dr. Marvin Werbitt, of McGill University, discusses with us the types and classifications of osseous furcal defects. Eli Machtei, University of Jerusalem, and visiting professor SUNY at Buffalo, discusses regeneration techniques in furcation defects. Our clinical feature, by Marta González, of Montreal, provides specifics on maintenance therapy for these patients post-surgically.

This new regenerative technology, together with companies committed to its continued evolution and researchers committed to its continued implementation, will assure success in this area.

This all sounds very promising, and it is; regeneration is an exciting new field. However, our patients are still at risk. We cannot immunize them against future destruction. We, as

hygienists, are health promoters and preventive specialists. We need to qualify and apprehend the circumstances that are conducive to disease. This is our area of concern and we must be a part of the answer.

Finally in my car and headed down the highway I gaze ahead to see what the road for dental hygiene will hold. What can we contribute to the answer? Medical and dental histories need to be augmented and reviewed at each appointment to collect information on lifestyle and stress factors, our didactic and clinical skills have to expand to encompass a greater knowledge in microbiology and laboratory expertise as we identify and monitor bacteria levels in our patients. Chemotherapeutics will most definitely be added to our armamentarium as we recognize mechanical limitations. Knowledge in the principles of diagnostics will have to be explored in order to steer our patients from encountering disease again at the next turn. This road to change is tortuous indeed. It will involve our schools, our curriculum and our graduate continuing education programs.

In 1992 we need to deal with this next trend. We will bring to you information on the diagnostic and therapeutic explosion. We'll show you new methods and legislation for health promotion and disease prevention and we'll become combatant in the field of asepis.

Until then, end your year with all thoughts of dentistry put aside as you spend this holiday season at the hearth with friends and family. The editorial staff at CDHA join me in wishing you an interlude of peace in closing '91 and a promise of great strides to come in '92. ☺

Contributing Editor



Connie Sharuga of Prince George, B.C., has been appointed Contributing Editor to *Probe* — with special responsibility for the dental hygiene schools. This will include encouraging faculty/staff to submit book reviews and acquiring self-assessment tests for publication.

Connie received an Associate Degree in Applied Science in Dental Hygiene from Westbrook College in 1973, a Bachelor of Arts from the University of New England in 1977, followed by a Masters Degree in Education from Colorado State University in 1987. She earned her PhD in Vocational Education from Colorado State University in 1990.

Connie has considerable private practice and dental hygiene education experience — both in Canada and the United States. She worked in private practice in Maine, Colorado, and Edmonton; and taught at Westbrook College, the University of Alberta, and Colorado Northwestern Community College where she served as Program Director for seven years. Connie holds a full-time position with the College of New Caledonia in Prince George, B.C.

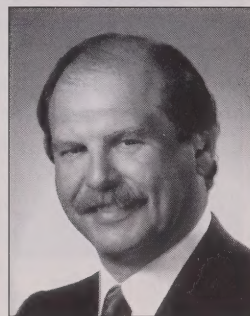
Dental Hygiene Education Information Co-ordinator



Carole Wellwood was recently appointed CDHA's Dental Hygiene Education Co-ordinator. Carole is a faculty member, Division of Dental Studies at the College of New Caledonia, Prince George, B.C. Her varied background includes public health, private practice, adult education and professional activities in both that province and Saskatchewan.

Carole will primarily liaise between dental hygiene educators — to increase the quality of dental hygiene education by collecting and disseminating appropriate information. Specific topics will be chosen for each, and requests for material will sent to all dental hygiene programs. The information will then be organized and distributed by regular mailings to each dental hygiene program.

New President of CDA



Dr. Les Allen was recently appointed President of the Canadian Dental Association.

Dr. Allen brings a wealth of experience gained from all levels of organized dentistry. He was president of the Winnipeg Dental Society and the Manitoba Dental Association, and is a member of Alpha Omega. Since 1985, Dr. Allen has been actively involved in CDA, holding various association positions including Manitoba representative on the board of directors, executive council member, and chairman of the communications steering committee.

Dr. Allen graduated from the University of Manitoba with his Doctorate in Dental Medicine in 1969, and has been in private practice since then in Winnipeg.

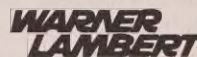


CFDE Fellowships

The Canadian Fund for Dental Education is now accepting applications for CFDE Teacher/Researcher fellowships; and for the CFDE fellowship for Dental Hygiene Teacher or Community Health Dental Hygienist, sponsored by Warner-Lambert Canada Inc.

Deadline for filing applications in both cases is March 1, 1992.

Forms and further information may be obtained from the CFDE office at: 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6 (613) 731-0493





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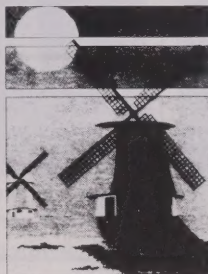
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July 1 to July 4, 1992

Dream ahead to next summer in Holland. Dale Scanlan, RDH, in conjunction with Marlin Travel has arranged two exciting tours to enhance your enjoyment of the 12th International Symposium on Dental Hygiene. You can enjoy a five-day pre-conference tour, and/or a one-week post-conference tour. Both itineraries offer the opportunity to visit the Dutch countryside.

Tour A — Saturday June 27 to Wednesday July 1. \$660.00 (Cdn.\$), \$595.00 (US\$), sharing a twin-room.

On Saturday evening you will have the opportunity of meeting your fellow travellers over cocktails, followed by dinner.

The next three days will be spent visiting Holland. Transportation will be by motorcoach. For those who feel energetic, bicycles will be provided, enabling you to see Holland in the traditional Dutch fashion. You will visit castles and the Liberation Museum, as well as cruise canals and rivers. Nature lovers will enjoy the National Park at Hoe Veluwe. And art fans will delight in the Van Gogh paintings at the Kroller Muller Museum. Also included will be a visit to the Floriade, the greatest flower show on earth, held once every ten years.

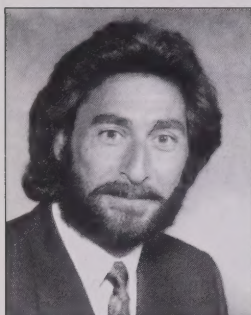
Tour B — Saturday July 4 to Saturday July 11. \$1250.00 (Cdn\$), \$1100 (US\$), sharing a twin-room.

A one-week tour of Holland, Belgium and Luxembourg, during which you will visit the historic marketplace at Middleburg, wander through the unique city of Bruges with its narrow streets and canals, and experience the excitement of Brussels, plus visit the world famous Atomium. Travelling through Luxembourg you will visit the Museum of The Battle of the Bulge, and the Roman city of Maastricht, including St. Peter's caves.

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This is a brief outline only, for more information on these tours, and airfare details contact Marlin Travel, 251 Laurier Avenue West, Ottawa, Ontario, K1P 5J6, Canada. Fax: 613-234-5293, or call collect: 613-563-4548. You can also contact Dale Scanlan at CDHA: 1-800-267-5235

Classification and Treatment of Furcation Defects



by Marvin Werbitz,
DDS, MScD,
Associate Professor,
Dept. of Periodontics,
McGill University, and
Section Head of Periodontics,
Jewish General Hospital,
Montréal.

The area between the inter-radicular bone and tooth structure (cementum) of multi-rooted teeth is referred to as the furcation. Teeth such as mandibular molars and some maxillary first premolars, with two roots, have bifurcations. Trifurcation refers to teeth with three roots such as maxillary molars.

Marginal periodontitis, both chronic¹ and episodic,² is characterized by resorption of the marginal bone surrounding the teeth with accompanying loss of the attachment of the gingival and periodontal fibres. As the loss of the periodontium progresses apically, the regions of the bifurcations and trifurcations of multirooted teeth are invaded.

Plaque and calculus, as well as iatrogenic factors that affect their accumulation and removal, are the principle causes of marginal periodontitis and furcation involvement. Other possible etiologies include traumatic occlusion, pulpal and systemic diseases as well as combinations of the above. Discussion of these etiologic factors, however, are not within the scope of this paper. Assuming an accurate diagnosis, treatment procedures to be discussed will be directed towards problems that have no underlying endodontic, occlusal nor systemic relationships.

The treatment of furcations in multi-rooted teeth has been the nemesis of the dental profession for many years. The decision surrounding treatment of these lesions has always been subjective, varying from clinician to clinician. A classification of furcation involvement will be outlined and, based on this, different modalities of treatment will be discussed.

There are several classifications of furcation involvement in the literature.³⁻⁷ The one proposed by Lindhe and Nyman⁶ appears to be the most simplistic and will be outlined here.

- Class I Horizontal loss of periodontal support less than 3mm.
- Class II Horizontal loss of periodontal support exceeding 3mm, but not encompassing the total width of the furcation.

Class III Horizontal "through and through" destruction of the periodontal tissue in the furcation.

The above categories have different degrees of horizontal pocketing. However, the rationale for the treatment of the furcations is constant, i.e., arrest the disease process via complete detoxification of the root surface and provide both the patient and dental therapist with access for proper plaque control to prevent further disease. These teeth should remain in function with comfort, with freedom from recurring infections and pain, and with no detriment to adjacent members of the dentition.

Attempts at significant correlations of survival potential of teeth with furcation involvement and varying methods of therapy are fraught with inconsistency of controls and documentation. Recommendations are made following longitudinal reviews of cases that have withstood the test of time. The teeth may have survived as a result of the sagacity of the therapist, the devotion of the patient, and the pathogenicity and virulence of the disease rather than the mode of therapy.⁸

Treatment of Class I Furcation Invasion

The Class I or incipient furcal lesion usually has a pocket that is suprabony and involves soft tissue. There may be slight bone loss in the furcation area.

Management of this type of defect usually involves root planing and oral hygiene instruction. If overhangs or over-contoured restorations exist in the prefurcal regions, they should be properly reshaped to minimize tissue irritation and plaque accumulation, and to maximize plaque removal.

In some cases, odontoplasty, also referred to as "barrelling or prepping in" may be used (Fig. 1). With this technique, contouring of the tooth and prefurcal area, with rotary instruments, until sound attachment is reached eliminates horizontal pocketing. This technique works best with diver-



Fig. 1: Odontoplasty or "barrelling in" of the molar teeth to eliminate horizontal pocketing and provide access for plaque control.



Fig. 2: Surgical view demonstrating Class II between mesio-buccal and palatal root.

gent rather than more parallel roots. With the latter, abrupt rather than gradual depressions on the tooth can be created. These lead to problems with plaque control, papillary enlargement, and recurrent horizontal pocketing. Sensitive roots or pulpal invasion may occur as a result of this form of therapy.

Class I furcations as a result of bony ledging present on the buccal aspects of maxillary molars and on the buccal and lingual aspects of mandibular molars. These may require osseous surgery and apically positioned flaps to reduce horizontal pocketing.

Treatment of Class II Furcal Invasion

The Class II furcal invasion (Fig. 2) is characterized by significant pocket depth and varying amounts of both horizontal and vertical bone loss. This lesion is usually not responsive to scaling and root planing alone, especially maxillary molars where access for root detoxification in proximal furcations may be quite compromised.⁹ Other important variables affecting proper root preparation would be the experience and skill of the clinician, root proximity problems, restorations, etc. It has been reported that flap elevation, i.e. open curettage, would then help to provide access for root detoxification. Surgical access and more experienced



Fig. 4: Surgical view demonstrating through and through communication between buccal and mesial furcations.



Fig. 3: Distal molar with root amputation; mesial molar with disto-buccal root sectioned out. Note with root amputation the crown of the tooth is left intact.

operators significantly enhanced calculus removal in molars with furcation invasion. However, total calculus removal in furcations using conventional instrumentation even with flap access may be limited.¹⁰ If incomplete root detoxification occurs, repair in the furcal area would be via a long junctional epithelium, which may be subject to repocketing.¹¹

Open flap curettage and root debridement may be accompanied by osseous surgery, odontoplasty and apical flap positioning to help minimize postoperative repocketing.¹²

Root amputation or root sectioning (Fig. 3) techniques may be employed to ensure proper root detoxification and facilitate plaque control postoperatively. The removal of one or more roots eliminates the potential for incomplete root debridement and difficult maintenance following curettage, whether it be open or closed. These techniques require devitalization of vital pulps which should precede root removal. Crown placement and possible splinting to adjacent teeth may be necessary.

Treatment of Class III Furcal Invasion

Class III furcal invasion have through and through communications, either buccal-to-lingual, or mesial-to-distal, or



Fig. 5: Hemisectional mandibular molar retaining the distal root.



Fig. 6: Mandibular molar with furcation having been "opened" to permit plaque control with pipe-cleaner.

from the buccal to either or both of the interproximal surfaces (Fig. 4). In many cases, the resection and removal of one or more roots of a molar are the only recourse for eliminating a lesion that has a high refractory response to debridement therapy. The difficulty in complete root detoxification and subsequent inaccessibility to maintenance, amongst other factors, warrant consideration of this technique as opposed to root curettage methods.¹⁰

Hemisection in mandibular molars may leave either the mesial or distal root (Fig. 5). The distal is usually the root of choice due to its larger area of attachment apparatus and relative ease of endodontic and restorative therapy. Often, mandibular molar Class III furcations are treated by hemisectioning the molar and retaining both roots. If a proper inter-radicular embrasure is not present between these roots, one may be established via orthodontic therapy.

Maxillary molar root resections usually involve the removal of either the distobuccal or mesiobuccal roots. Occasionally the palatal root alone is retained.

Tunnel preparation (Fig. 6) is another technique employed to manage Class III furcations. If the root anatomy permits, the bi- or tri-furcations are widened by resection of bone to provide access for inter-radicular cleansing post-surgically. Tunnel preparations have, however, been associated with poor prognoses, particularly due to the risk of root caries.¹³ Others have found that opening of the furca has a significantly better prognosis than reported earlier.¹⁴

Frequently the best mode of therapy may be the removal of the entire tooth. If the furcated tooth is so badly involved that none of the roots are salvageable, or if healthy teeth exist on either side of the tooth in question, then extraction may be the treatment of choice.¹⁵ ■

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Maintenance Therapy



*By Marta González, RDH,
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The key word to keep in mind when maintenance of furcations is concerned is ACCESS. The presence of a bifurcation or trifurcation involvement does not indicate a hopeless prognosis. Problems arise when a lesion reaches the furcation causing difficulty for access to the area for scaling and root planing, as well as inaccessibility of the area for plaque control by the patient. If both these problems can be resolved whether it be surgically, or simply by maintenance therapy, the prognosis will be similar to that of single-rooted teeth with similar degrees of bone loss.¹

Some furcations may be clinically visible, others obscured by the inflamed wall of a periodontal pocket. The extent of involvement is determined by exploration with a blunt probe and a simultaneous blast of warm air to facilitate visualization.¹

A definitive evaluation of possible furcation involvements is made by clinical examination with specially designed probes like the Nabers probe, that can reveal lesions otherwise undetected with regular probes or pigtail explorers.¹ The advantages of using a Nabers furcation probe are: 1) it is less flexible than an explorer; 2) it has a blunt end rather than a sharp point; 3) it has a longer working end than an explorer; 4) it is specifically designed to curve into the furcation; and 5) it cannot be damaged by insertion into a furcation area. The major disadvantage of the pigtail explorer is that it may develop a burr making it unsuitable for detection of calculus.²

The Nabers probe is not calibrated. Although, recent evidence shows that a Nabers probe calibrated in 1 mm increments may be used to measure the amount of horizontal breakdown from a fixed reference point. This technique is useful during clinical monitoring of a furcation region and has shown to be 94 per cent reproducible within 1 mm in replicate clinical trials.³

Anatomical variations that complicate furcation examination include fused roots, close proximity roots, anomalies

such as extra roots, enamelomas, and long crowns (taurodontism).⁴

In 58 per cent of maxillary and mandibular first molars, the furcation entrance diameter is narrower than the width of commonly used periodontal curettes, making proper instrumentation and access difficult and very limited. Narrowed curettes may be of choice in this case.^{1,5}

A study done by Matia, Bissanda, Maybury, and Richetti demonstrates the inadequacy of calculus removal in the furcation using a non-surgical approach, regardless of whether curettes or ultrasonic instrumentation is used. Although the use of a surgical flap to gain access to the furcation greatly improves the chances of thorough calculus removal, ultrasonic instrumentation appears to more adequately remove calculus in the narrow furcation areas.

Thus, in the wide furcation areas the curette and ultrasonic scaler appear to have similar effectiveness in root preparation.⁶

The first treatment procedures are scaling and proper oral hygiene. Defective restorations should be replaced, since they complicate therapy and prevent thorough plaque removal. Class I and some Class II involvements respond well to initial therapy.⁵

Furcations treated with odontoplasty or tunnelling should be closely monitored for sensitivity and caries control. Especially with tunnelling, topical fluoride treatments should be given at every recall appointment. A variety of dental adjuncts are available for the patient's home use, depending on the severity of furcation involvement.

These include pipe-cleaners, proxabrushes, Superfloss[®], Pik Pocket[®] subgingival tip, end-tufts, rubber tips, and yarn to name a few. A soft nylon toothbrush is recommended at all times no matter what the degree of furcation involvement. If the patient is having difficulty with plaque control, many individualized techniques can be taught. For instance, in a Class III furcation, with or without tunnelling, a prox-abrush dipped in 0.12 per cent chlorhexidine gluconate mouthrinse can aid in reducing plaque accumulation. Depending on the case presented, the patient may or may not consent to surgical treatments. Oral hygiene instructions should be given in accordance with the patient's decision. Hirschfeld and Wasserman concluded that overall case stability may be as important as the degree of furcation involvement in determining the prognosis of molars after evaluating 600 patients who had been treated for periodontal disease every four to six months for at least fifteen years.³

For furcation defects treated by guided tissue regeneration with GORE-TEX[®] Periodontal Material, two very informative pamphlets on postoperative care are provided by W.L. Gore & Associates for both the patient, as well as

the office staff. These pamphlets offer guidelines to keep the site as clean as possible without mechanically disrupting or damaging the wound. Gentle brushing with a soft bristle toothbrush is emphasized along with the use of a 0.12 per cent chlorhexidine rinse for as long as the material is in place. The patient is to avoid disturbing the sutures with the tongue and is instructed not to floss. The patient should be seen every seven to ten days while the material is still in place to evaluate for suture removal and to reinforce plaque control. Coronal polishing without the use of pumice or supragingival scaling will be determined by the clinician. Exposure of the material is expected and can occur at any time after surgery. This is not a problem although it makes the area more susceptible to plaque accumulation. In this case, the same instructions are to be followed by the patient as previously mentioned. The clinician should take care not to catch or disturb the material or sutures when polishing. The patient is to inform the clinician if the exposed material interferes with oral hygiene causing problems like excessive plaque accumulation, food impaction, or any changes in the gingiva.^{7,8}

In this case, early retrieval of the material may be necessary by the clinician. Generally, the material should be removed between four and six weeks after placement even if the material is exposed and no complications occur. An antibiotic regime is left to the clinician's discretion, and the importance of it being properly followed is emphasized to the patient. The newly regenerated tissue should not be probed until at least six months postoperatively to avoid possible damage.^{7,8}

Varying degrees of furcation involvement require different modes of treatment that do not all provide for elimination of the furcation. As dental hygienists we are responsible for providing proper individualized oral hygiene instructions and close maintenance care. The suggestions provided may be applied with the doctor and changed at his/her discretion so you can work together to achieve success with your patient care and management. ☛

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Regenerative Therapy

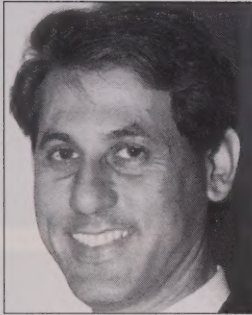
In the early 1980's a unique partnership was formed between scientists, dentists, and industry to give patients a new way to save their natural teeth. This co-operative effort resulted in a procedure which makes it possible to guide tissues and regenerate support for an otherwise compromised tooth.

The Biology: In order for regeneration to occur, only cells capable of producing attachment fibers should be allowed access to the tooth root. Unwanted cells must be kept away from the root so that slower-growing attachment fibers can form.

The Procedure: Regenerative therapy incorporates all of the proven methods involved in conventional periodontal surgery, with one important difference. After laying back the gum tissue, exposing the tooth root, and thoroughly cleaning the area, a biocompatible material is placed around the tooth root. When the gum tissue is returned to its original position it covers the material, which, in turn, prevents the wrong cells from interfering with healing. After a period of four to six weeks the material is removed in a minor second surgery and the tooth is surrounded by new, healthy tissue.*

*Reproduced from a GORE-TEX® Periodontal Material Patient Information brochure with kind permission of W. L. Gore & Associates.

Regenerative Approach for the Treatment of Furcation Defects



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Multi-rooted teeth with severe attachment loss in the bifurcation or trifurcation area, pose a true therapeutic dilemma for the dental team. This enigma is clearly demonstrated in the diversity of opinions regarding the treatment of choice for such conditions. The array of treatment modalities that are available range from a conservative non-surgical approach on one extreme,¹ to radical extraction on the other.² Part of the controversy may be attributed to the insufficient predictability of the currently available techniques,³ while individual variation in the anatomy, morphology and etiology of these furcation defects accounts for the remainder of the therapeutic puzzle. Despite these problems, patient selection, proper diagnosis and a 'hand-tailored' treatment modality would enable one to negotiate successfully, most of these pathological lesions.

Recently a significant improvement in regenerative techniques, aimed at reconstructing the periodontium, has further increased the variety of procedures now available for negotiating furcation involvements.⁴

The purpose of this review is to discuss the presently available treatment modalities designed for the periodontal reconstruction of furcation defects together with some futuristic consideration.

What is Regeneration?

Periodontal regeneration is the restoration of the lost periodontal apparatus which includes new bone formation, cementogenesis and functionally-oriented periodontal ligament. By comparison, periodontal repair represents healing of the affected periodontium which includes part, but not all, of the above component.

The reproduction of the lost periodontal apparatus is the ultimate goal of every periodontal therapy. Furcation defects are not different in that respect. To achieve this goal, a variety of procedures and agents have been tested with greater or lesser degrees of success. These results range considerably,

depending on the methodology, agent, and the different authors.⁵⁻⁶

While regeneration has sometimes been attainable, more often, it is not achieved: Though the clinical and radiographic appearance of given treated sites very often resemble that of the original periodontium, histological studies have shown that while the bony component has been restored, cementum and functionally-oriented connective tissue fibres are seldom present.⁷ Thus clinically successful treatment of furcation defect is possible, with the end-result being most likely healing by repair. While repair might still be considered a favourable response, it should not be confused with "regeneration" which is the ultimate goal.

The sometimes conflicting reports, together with the limited predictability, has discouraged the use of reconstructive periodontal procedure in furcation defects. Recent advancement in guided tissue regeneration has attracted renewed attention to the matter. Increased knowledge and improved techniques are now yielding better results.⁸

Treatment Modalities

(a) Bone Grafts

Bone grafts have been used extensively for several decades to induce bone formation in furcation defects: Autogenous, allogenic and xenogenic materials have all been utilized with varying degrees of technical difficulties, post-operative morbidity, and success.⁹

Autogenous hip red-marrow transplant showed promising results when first introduced,¹⁰ but was soon discontinued due to technical difficulties and severe side-effects (external root resorption and ankylosis).

Autogenous intra-oral grafts and, in particular, extraction-site grafts are potent agents to promote bone formation in furcation defects. A lag period of 8-12 weeks is required before the material in the socket is most suitable for inductive purposes; thus proper timing is essential for a successful operation (Fig. 1).

Freeze-dried bone, both calcified and decalcified, has shown some regenerative potential in furcation defects. However, more often than not it results in bone repair with no apparent regeneration of the other periodontal component. When these materials are combined with autogenous bone, improvements in their regenerative potential¹¹ have been reported.

(b) Alloplastic Materials:

Synthetic materials of varying composition have been tested for the treatment of furcation defects with limited success. Of these, porous hydroxy-apatite is the only materi-

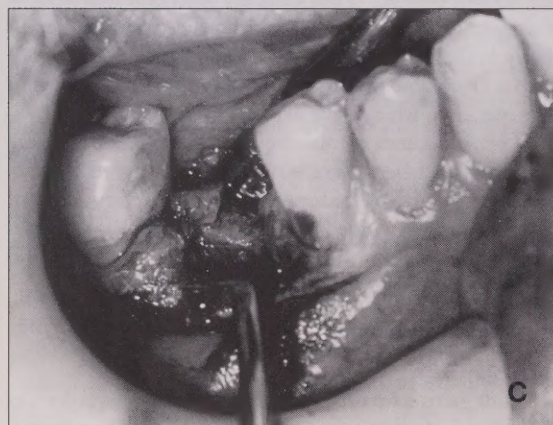
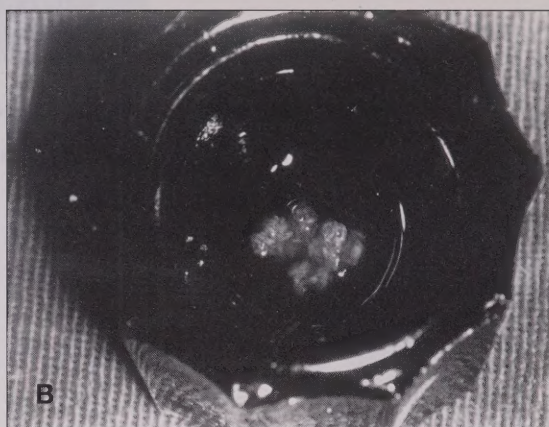
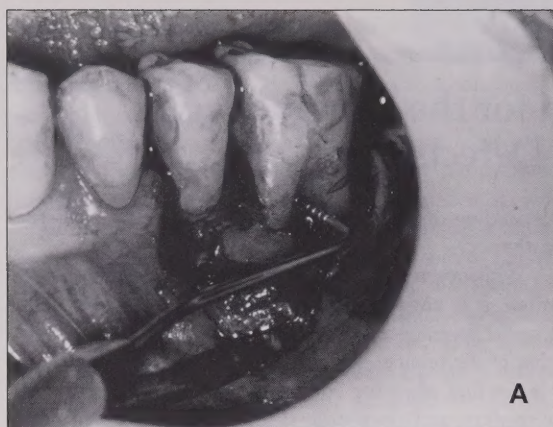


Fig 1: Deep cl. II furcation involvement (a) treated with autogenous bone graft (b) taken from an extraction site (c). Two years later, complete bone fill is observed (d).

al in which some degree of regenerative capacity was demonstrated in Class II furcation defects.¹² While none of the other materials has offered such quality, they might still be advantageous for the treatment of this pathology: Acting as fillers (encapsulated by native connective tissue), they may support the soft tissues thus preventing plaque accumulation in the furcation area (Fig. 2).

(c) Guided Tissue Regeneration:

This term refers to a technique which attempts to enhance periodontal regeneration via differential tissue response and exclusion of certain cells from the healing process. Membranous barriers,¹³ denudation procedures¹⁴ and coronally-positioned flap operations,¹⁵⁻¹⁶ all yield favourable results in the treatment of Class II and III furcation defects. GORE-TEX® Periodontal Material is the most widely used material for this purpose (Fig. 3). It has evolved from scientific hypothesis, through controlled animal and human studies to a point where it is now the most predictable material for periodontal regeneration in Class II furcation defects.^{5,17-19} Class III furcation defects have not responded as favourably to guided tissue regeneration using membrane

barriers. Some studies suggest that the use of these membranes, together with bone grafts, yield improved results in the treatment of Class III furcation involvements.²⁰ As much as this procedure offers a great advantage in the treatment of furcation defects, it is not without faults: The need for a secondary surgical procedure in order to retrieve the membrane is by far its major disadvantage. Several recent studies with resorbable membranes indicate that such materials might have the desired regenerative potential without the need for secondary surgical phase.²¹⁻²² Nonetheless, several years are required before it matures from the experimental phase into a clinical reality.

(d) Chemical Root Treatment:

Root surface demineralization using citric acid has been shown to expose the collagen matrix of the dentin, thus inducing periodontal regeneration. Ever since this pioneering research by Register and Burdick,²³ numerous studies have been put forward to test this hypothesis in furcation defects. The results of these studies is somewhat conflicting: Crigger²⁴ and Nilveus²⁵ found, in dogs, a significant advantage to the use of citric acid conditioning in Class II and III

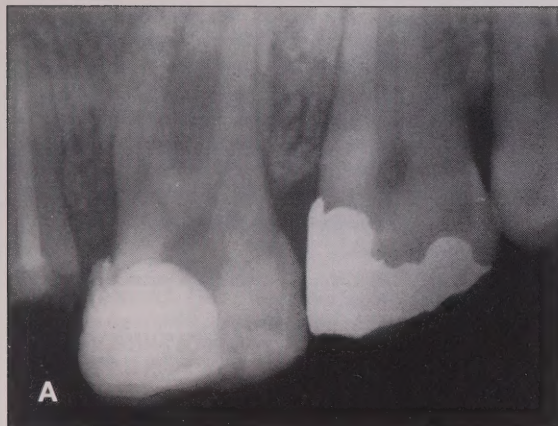


Fig. 2: Alloplastic material was placed in the upper first right molar (a). 1 year later, the grafted material is in place (b).

furcation defects. However, human experimental studies failed to duplicate these animal results: Parodi,²⁶ when testing citric acid conditioning versus surgical control, could not find any significant differences. This was also the case with several other human studies.²⁷⁻²⁹ Consequently, this modality is not yet considered proven to aid in the treatment of furcation defects.

Tetracycline hydrochloride has been linked with improved healing potential in experimental furcation defects in dogs.³⁰ The mechanism is related to both its anti-infective properties and anti-collagenase activity.³¹ Recently, Machtei *et al.* have demonstrated that tetracycline irrigation improves the regenerative potential of a membrane barrier in negotiating Class II furcation defects in humans.³² While root conditioning might not provide for regeneration per se, it might well be found useful in enhancing other regenerative techniques.

(e) Growth Factors

Bone morphogenic proteins (BMP) and other growth factors have been shown to regulate bone apposition and resorption. These factors, (IL1, IL2, PDGF, IGF, TGFb and

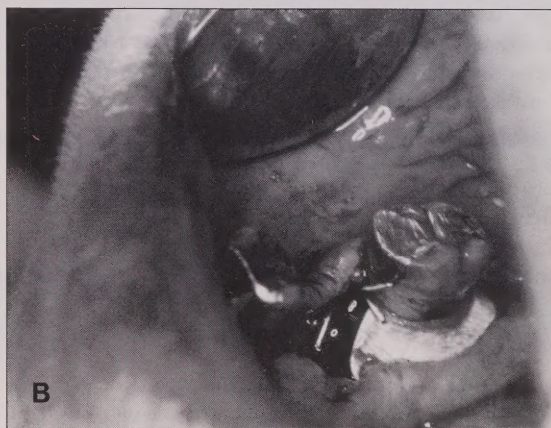
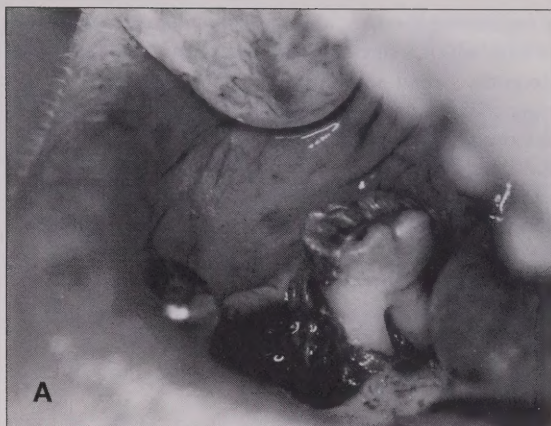


Fig. 3: Deep cl. II furcation defect in the lingual of #47 (a) was treated with Gore periodontal membrane (b). Twelve months later, a new bone is evident in the furcation (c).

many others) are released by cells of the microenvironment and the osteoblastic lineage. Urist's pioneering studies³³ of BMP are dated back to 1967, but difficulties in extraction and purification methods has slowed its implementation into our treatment armamentarium. Advancement in genet-

ic engineering has made it possible to produce these proteins *in-vitro*, which is sure to accelerate the research in this field. Recently, several animal studies have demonstrated the regenerative capabilities of these factors: Lynch *et al.*³⁴ demonstrated the regenerative capability of gel containing IGF1 and PDGF on the periodontium. More recently, Jin³⁵ has been able to enhance the regeneration of periodontal bony defects using BMP incorporated with bio-active glass ceramics.

The evolution of these factors is yet ahead of us. Nonetheless, when completed, it is believed to hold promising clinical application in periodontal therapy.

Future Considerations

The potential of the periodontium to undergo regeneration has been clearly shown, though with significant variability. Recent trials with several new agents have further demonstrated their potential to promote the regenerative capacity of the periodontium. These include: Fibronectin,³⁶ Chlorhexidine,³⁷ zinc iontophoresis³⁸ and a variety of growth factors. Further studies will focus on refining the presently existing techniques, together with the coupling of different treatment modalities. Of these, a synergistic effect between guided tissue regeneration together with BMP and possibly other growth factors, seems to be the most promising avenue for the future. ■

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FANSHAWE COLLEGE

**7 FUTURE
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COLLEGE**

PROFESSOR Health Technology Division

Duties: To prepare, teach and evaluate courses in the Dental Hygiene and Dental Assisting Programs in both classroom and clinical settings.

Qualifications: Related Bachelor's Degree. Graduate of a community college Dental Assistant Program. Licensed to practice as a Dental Hygienist in Ontario with several years' current hygienist experience. Ability to teach in any clinical area (i.e. preventative, orthodontic). Excellent interpersonal and communication skills. Evidence of continuing education at an advanced related degree level and/or teaching experience in a community college setting would be an asset.

This is a full-time position commencing August 16, 1992.

Closing date: February 28, 1992

Please quote competition no. F91-101F on your application and submit to:

Human Resources, Fanshawe College
P.O. Box 4005, London, Ontario N5W 5H1

Fax 519/452-3570

While all responses will be appreciated and handled in strictest confidence, only those applications being considered for interviews will be acknowledged.

The College invites applications from both women and men.

Dental Hygiene Profile

Alternatives in Dental Hygiene Practice



*by Christine Jane Wooley, RDH,
who currently combines
part-time private practice with
research and teaching at
McGill university.*

Introduction

The traditional role of the dental hygienist in Canada is to practise dental hygiene in a private dental office. As a dental hygienist, having graduated in 1983 from John Abbott College in Montreal, I worked for my first six years in an alternative setting.

Hospital Dental Hygiene Practice

My dental hygiene career began in a hospital dental clinic at the Sir Mortimer B. Davis-Jewish General Hospital where I completed a one-year residency program in dental hygiene. Upon completion of this residency, I was invited to join the hospital staff as the supervising dental hygienist for the program. My responsibilities included: teaching the yearly dental hygiene residents (particularly root planing skills); overseeing visiting dental hygiene students on rotation from John Abbott College and CEGEP de Maisonneuve; handling a patient-load of approximately 20 patients a week; treating patients in four long-term care wards at the hospital (the geriatric, psychiatric, neurologic and oncology wards); and servicing three geriatric hospitals.

The main role of the dental hygienist in these expanded settings is to impact oral hygiene instruction and advice to the patients, and/or the primary health care provider. The dental hygienist lectures to the hospital staff on basic oral hygiene care for all types of patients, including the staff themselves.

Research

During my last two years at the Jewish General Hospital, the dental department, in affiliation with McGill University, began conducting research into the epidemiology of periodontal diseases and caries within the HIV seropositive population. There were 100 subjects who participated in the study. One fifth of them formed a control group of HIV seronegative individuals whom we separated into equal groups of healthy and unhealthy periodontiums. As the

dental hygienist, I was responsible for the measurement of the plaque, gingival, and periodontal indices on each patient. The Klein and Palmer Index was used to determine the DMF (decayed, missing or filled), scores, along with the Loe and Silness' Gingival and Plaque Indices. The Periodontal Index was calculated using a comparison of the probing pocket depth (PD), and the cemento-enamel junction (CEJ), as a fixed reference point for the attachment level (AL). This procedure is described by Clark *et al.*¹ A dental assistant recorded all 252 potential measurements per patient. Prophylaxes and oral hygiene instructions were provided with an emphasis on prevention. Monitoring the recall of the patients was my final responsibility.

Ever since my dental hygiene studies, research has been of great interest to me. Therefore, I considered it a marvelous opportunity when a part-time position became available in the research department within the Dental Faculty at McGill University. My first project, which I am working on at present, began in December 1989. The objective is an evaluation of the efficacy of a dental product. It is a double blind, multi-centred study of six months duration. The study consists of 100 participants. During the initial stage of this particular study, the patients were seen by the dental hygienists who were responsible for performing a prophylaxis in order to achieve a baseline; a calculus and plaque-free mouth. The study is on-going but, at its completion, the dental hygienists will perform a second prophylaxis as a final service for each subject.

The second project is the testing of the efficacy of a dental product. The role of the dental hygienist is to monitor the patients as they carry out each task defined in the study, and to aid the laboratory researcher. This is a double blind study of short duration, two weeks, with 18 subjects.

As these examples illustrate, each research project is a unique educational experience.

Teaching

Currently, in addition to my part-time work in private practice, I am also employed at McGill University by the Community Health and Periodontal Departments with the Faculty of Dentistry. One afternoon a week is spent at the Constance Lethbridge Rehabilitation Centre, and one full day is spent at the Montreal General Hospital (MGH). The former position involves supervising fourth year dental students. They are on a rotation at this outpatient dental clinic, where basic treatment is rendered. Most of their patients are cerebrovascular (CVA or stroke), and motor vehicle accident (MVA) victims. This implies that they usually have some type of physical handicap. The dental hygienist is also responsible for meeting the many, and varied, oral hygiene

needs of these patients by adapting their oral hygiene adjuncts. My mornings at MGH are allocated to setting up a recall system for the student clinic. During the afternoon, a colleague and I work together testing the students on: scaling and root planing techniques; sharpening skills; and instrument identification. We also instruct first and second year students on these same basic dental hygiene skills and techniques.

Conclusion

I love my profession because of its diversity. It allows me to stay challenged by providing a variety of work settings and research projects. During changing times, this variety has enabled me to remain current in my field, the profession of dental hygiene. ☺

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Clean down to the Pink!

Oral hygiene instruction and disease prevention are everyday concerns for the hygienist. If true oral hygiene awareness is to be achieved, patients must be informed.

Dental professionals know **the tongue is one of the main focuses of microorganisms in the mouth**, and is therefore a source of **bacteria for dental plaque, gingiva disease, and halitosis.**

Clinical studies conducted on the effects of tongue cleaning prove that: **habitual tongue cleaning is important and necessary in reducing plaque build up, preventing oral diseases, reducing mouth odor, and improving taste thresholds.**



Your patients need to know. Send for your SAKOOL Tongue Cleaners and copies of clinical studies today.

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DIRECTOR

Dental Hygiene Baccalaureate Degree Completion Program

Applications are invited for a sixty percent (60%) position in the Department of Clinical Dental Sciences as Director of the newly established Baccalaureate degree completion program for dental hygiene. The program will prepare dental hygienists for a variety of leadership roles in the health care system. The position involves administration and teaching in the dental hygiene degree completion program and teaching in the D.M.D. program. Graduation from an accredited dental hygiene program, postbaccalaureate education, previous teaching experience in an academic institution and clinical experience are required. It is anticipated that the successful candidate will register and retain annual dental hygiene licensure with the College of Dental Surgeons of B.C.



The starting date is **February 1, 1992 or as soon as possible thereafter.** Salary and rank will be dependent upon qualifications and experience and are subject to final budgetary approval. The University of British Columbia encourages qualified women and minority applicants. In accordance with Canadian Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada.

Candidates are requested to forward a letter of application (including the names and addresses of three referees whom the search committee may contact) and a curriculum vitae **prior to December 31, 1991.** Applications or further inquiries may be directed to:

Dr. John G. Silver, Chair
Search Committee for Director of Dental Hygiene
Baccalaureate Degree Completion Program
Department of Clinical Dental Sciences
Faculty of Dentistry
The University of British Columbia
2199 Wesbrook Mall, Vancouver, B.C. V6T 1Z3
Phone: (604) 822-4597 Fax: (604) 822-3562

CDHA Research Fellowship



Charla Joyce Lautar

1991-1992 Research Fellowship Recipient

Charla Joyce Lautar has been selected as the fifth recipient of the CDHA Research Fellowship. This \$3,000 fellowship is awarded annually. Selection is made from candidates who are Canadian dental hygienists enrolled in a research-oriented Masters or Doctoral program.

Charla is a 1971 dental hygiene graduate of Ohio State University.

She is presently a second-year doctoral student in the Department of Educational Policy and Administrative Studies at the University of Calgary. Having completed her coursework last year, she is preparing for her candidacy examination. Her main area of interest is professional development. As dental hygiene is expanding in the process of professionalization, her thesis plans to investigate continuing education and future careers of dental hygienists. The study will consider the realities of the baccalaureate dental hygienist, and the needs of the profession. One research objective is to provide insight into the feasibility of distance education, career advancement/enhancement, and general satisfaction in dental hygiene.

Progress updates from past CDHA Research Fellowship Recipients

Ellen Brownstone (1990-91)

"I was admitted to an Interdisciplinary PhD program at the University of Manitoba in August, 1990, and have now completed one year of coursework. My program involves an interdisciplinary approach to the study of professional socialization and hence combines coursework from the fields of education, sociology and law. During this past academic year, I have carried out coursework in sociological theory related to socialization, professionalism and health care issues, higher education issues as related to the process of professional socialization, and research methods.

My proposed research area involves the influence of the educational environment on the professional socialization of undergraduate dental hygiene students. The ability of dental hygiene education programs to prepare dental hygienists in the development of professional attitudes and values may be a major contributing factor in the professionalization of dental hygiene in Canada.

Over the next few years I will complete further coursework, and conduct research. I am grateful to CDHA for their financial assistance, and wish to extend my appreciation to the Board of Directors for their support of dental hygienists who wish to pursue formal, advanced education."

Yvonne Knazan (1987-88)

Yvonne completed her Masters Program (Health Education) at the University of Manitoba in 1989.

"The following year, I relocated to New Jersey where I am working as a medical writer for a pharmaceutical company. This involves preparation of research reports that are submitted to the Federal Drug Administration for new drug approval. I moved into this very challenging and interesting area because at the time there was nothing available in geriatric dentistry. My dental hygiene research skills, however, are standing me in good stead." 🍀

Call for Applicants

Canadian Dental Hygienists
Association Research Training
Fellowship '92-'93

Fellowship:

One \$3,000 award to be made
annually

Eligibility:

Any Canadian dental hygienist enrolled
in a research-oriented Masters or
Doctoral program may apply.

An applicant must be a member of
CDHA.

An applicant may receive a maximum
of two Research Training Fellowships,
but must reapply for the second year.

For an application form and further
details, write:

Canadian Dental Hygienists
Association
1018 Merivale Road, Suite 201
Ottawa, Ontario
K1Z 6A5

Application Deadline:
March 31, 1992

Scientific Updates et cetera

CDA Revises Teeth Whiteners Statement

The Committee on Community and Institutional Dentistry presented a revised Statement on Teeth Whiteners at the CDA Board of Governors' interim meeting in April, 1991. It received unanimous consent:

"CDA is aware that whitening or bleaching claims are being made by a number of new products containing various types of oxidizing agents as the whitening or bleaching ingredient. Most of these products are in the form of a liquid or gel that is applied (directly by the dentist or by the patient) via a mouth-guard tray, and worn for several hours daily; other are toothpastes, one of which may be combined with a gel, while some utilize a multi-step process consisting of a mouth-cleansing agent, a gel, and one or more polishing creams. Some products are intended to be prescribed by dentists while others are sold over the counter.

The Committee on Community and Institutional Dentistry has written to the Health Protection Branch of Health and Welfare Canada and asked for its position on these products. Clarification is being sought as to whether these products may be considered cosmetics, devices, or drugs under federal regulations. Products marketed as cosmetics, for example, may escape specific regulation.

These products may be safe and effective. However, concern has been expressed because manufacturers do not have long-term safety data available. Some published scientific studies show that regular use of oxygenating agents may damage temporarily the soft tissues of the mouth, and may delay the healing of already damaged tissue. Other studies show that the use of these agents may cause varying degrees of damage to the pulp of the teeth.

The CDA will advise members of the results of the CDA communication with the Health Protection Branch of Health and Welfare Canada. In the interim, although light to moderate aging stains may be visibly reduced by products containing oxygenating agents, the need for

longer-term safety studies would suggest a cautious approach. Candid patient disclosure and adequate advice on home care are essential if clinicians choose to use or recommend these products. CDA believes that the public should only use these products after consultation with a dentist." ❧

"Dry Mouth" Shown to Cause Tooth Erosion

The roots and crowns of teeth are more likely to become decayed in persons who take any one of the 400 different medications that decrease the amount of saliva in the mouth, according to an item in the July/August 1991 *General Dentistry*.

Research done by Athena S. Papas, of Tufts University School of Dental Medicine, showed that of those who were taking medication, 47 per cent had decay affecting the roots of their teeth.

Of the non-medicated group, 26 per cent had decayed crown surfaces, and 20 per cent had decayed tooth roots.

The study consisted of an initial survey of 370 healthy individuals, most over age 60, who received routine dental care. Sixty of them had been taking medications (ranging from antihistamines to antipsychosis medication), and they appeared to have xerostomia.

Papas' research showed that for subjects over 60 years, 50 per cent of those taking medication, but only 23 per cent of those not taking it, had decayed tooth roots.

The study found that those with the highest incidence of decay also had the lowest flow of saliva, and those with the lowest incidences of decay had the most saliva.

Papas suggests that the use of a fluoridated rinse or gel might prevent the occurrence of this type of decay. ❧

Children: Oral problems from cancer

Most children with leukemia face oral health problems because of their disease and the effects of its treatment, suggest the results of a new study by researchers at the University of Alabama School of

Dentistry and reported by Mary Daum in the *NIDR Research Digest*, May 1991.

The researchers say this finding is important because it confirms that oral complications are a common problem in childhood cancer and it directs attention to the need for children with cancer to undergo evaluation and treatment of oral complications.

In their study, NIDR grantee Dr. Noel K. Childers and colleagues examined 24 children newly diagnosed with leukemia. They examined the children at the time of diagnosis and periodically throughout treatment.

The scientists observed oral complications which included; erythema, bleeding gums, ulcers, and white plaques — sometimes a sign of candida. Twenty-three per cent of the oral problems were present at diagnosis; 10 per cent occurred during fevers; and 67 per cent occurred during chemotherapy.

None of the children with oral complications developed systemic infections as a result of their oral problems. All the oral problems disappeared after being treated.

Scientists think that children may be more susceptible than adults to the oral problems that result from chemotherapy. As anti-cancer drugs attack rapidly dividing cancer cells, they also attack healthy cells that naturally divide rapidly, including the cells that line the mouth.

Children's mouths are more vulnerable to the effects of these drugs because this natural division process is faster in children than in adults. Another possible reason for children's greater susceptibility is that cancer treatments given to children are sometimes more aggressive than those given to adults.

Researchers stress that a thorough oral examination to check for potential problems and intensive oral hygiene practices before and during treatment are necessary to minimize the extent of oral complications. ❧

Children's Preferences in Dentifrices

Children showed "no significant differences in taste preference between the regular and children's flavoured denti-

frice," according to a study done at West Virginia University School of Dentistry.

Researchers Carol Sherrill Spear, and Laura Anne Savisky, did find, however, significant differences existed in visual preference. They report that children preferred the modern, child-oriented dentifrices and containers.

Spear and Savisky conducted the study of dentifrice choices with 435 fourth grade children in Monongalia and Preston counties in West Virginia. The group included 10-year-old children from 10 different elementary schools in both urban and rural areas.

Their results indicated that children preferred a gel to paste, and blue sparkle gel to a plain blue gel. The pump container was preferred to the tube, and the flip-top lid preferred to the twist-off lid.

The study, published in the July-August 1991 *Journal of Dentistry for Children*, concluded that:

- Fourth-grade children do not prefer a "child-flavoured" dentifrice over a regular flavoured dentifrice of the same brand, when one is tasted immediately after the other. Further tests should be conducted, however, in which time is allotted for gustatory adaption between tastings;
- Children visually prefer dentifrice pastes and gels that are designed specifically for them;
- Children prefer modern dentifrice-container designs over the traditional; and
- Children from rural and urban schools do not differ in their taste and visual preferences of traditional and child-oriented dentifrices. 🐾

Pain-causing Enzymes in TM Synovial Fluid

Dr. James Quinn, professor of oral and maxillofacial surgery at Louisiana State University Medical Center, has discovered two pain-causing compounds in the synovial fluid of the temporomandibular joint. The enzymes were identified as Leukotrien B4 and prostaglandin #2.

Discovery of these two compounds actually present in the TM synovial fluid could lead to development of spe-

cific chemical blockers to inhibit their ability to cause TMJ pain, Quinn suggested in an item in *The Bandedette*, newsletter of the International Association For Orthodontics. 🐾

Need for Dentists May Fall As Demand for Hygienists Rises

By 2010, dental hygienists will be in much demand and dentists will have fewer job opportunities, predicts John W. Hein, director of the Forsyth Dental Center in Boston in an item in the August *Dental Management*.

Hein's report, which first appeared in *AGD Impact*, states that while there are currently about 150,000 dentists and 40,000 hygienists, the numbers will be reversed in 20 years. "Much of the dental work in the future will be prevention-oriented, like cleanings, which don't need to be done by a dentist. Good prevention will eliminate the need for dental work because 60 per cent of the current work is related to caries," he says.

Hein also projects a drastic reduction in the number of dental schools, graduates and specialty training programs. "It is doubtful that an expansion of specialty training would serve a socially useful purpose," he notes.

In addition, as the decline in caries cuts into practice business, pediatric dentists are moving into orthodontics, and general practitioners are cutting back on their referrals to periodontists and endodontists. "The financial advantage of being a specialist is decreasing and will continue for some time," Heins adds.

He believes the trend towards general training should include a 5-year curriculum for more comprehensive training to avoid the problem of creating too many specialists. 🐾

"Dry Mouth" Treatment

Researchers at the University of Connecticut Health Center reported recently that it is possible to stimulate continuous secretion of saliva by direct continuous application of a drug to the mucous membranes of the inner surface of the cheek.

This may have wide implications for the treatment of xerostomia, or dry mouth, says Dr. Jason M. Tanzer of the UC School of Dental Medicine.

Tanzer and Drs. Margaret L. Weaver and Paul A. Kramer of UC School of Pharmacy reported their ability to deliver the drug pilocarpine directly across the cheeks of dogs and successfully induce constant, low rates of salivary secretion with minimal side-effects.

Millions of people world-wide suffer from xerostomia. This condition commonly results from the use of medications which dry the salivary secretions; from Sjogren's syndrome, a condition in which the immune system of the body attacks the person's own salivary glands; or from surgical or radiation damage to the saliva-producing glands.

Xerostomia has frequent consequences — rampant tooth decay, inflammation of the mucous membranes of the mouth, with accompanying pain, burning and loss of taste sensation. It can make functions such as speaking, chewing, swallowing solid foods and sleeping difficult.

The drug is rapidly inactivated by the liver. Thus by applying the drug to the cheek rather than to the intestinal lining (as occurs when pilocarpine tablets are swallowed), the liver's effects on the drug can be largely bypassed and the total dose of the drug needed to cause saliva secretion minimized.

Because it is possible for low drug doses to be delivered continuously through the cheek, the researchers say a new principle may have been established in the management of dry mouth. 🐾

1991-1992 Membership

Membership invoices were sent in September.

If you do not receive your application, or for further information, please contact
CDHA Membership Line

1-800-267-5235.

SELF ASSESSMENT TEST

DENTAL HYGIENE PROFESSIONAL CHECK LIST

- 1 Do you support your professional association through membership?
- 2 Do you volunteer time to work for your professional association?
- 3 Do you present and promote a professional image? e.g. well groomed, good oral hygiene, display professional diplomas/degrees, wear a name-tag indicating surname and degrees.
- 4 Do you take a genuine committed interest in your patients or clients?
- 5 Have you read the CDHA Code of Ethics? Do you abide by them?
- 6 Do you maintain patient/client confidentiality?
- 7 Do you offer dental hygiene care to ALL patients/clients regardless of medical history as outlined by CDHA's policy statement on treating patients with infectious diseases?
- 8 Do you practise according to the CDHA Clinical Practice Standards?
- 9 Do you maintain your professional competence through continuing education?
- 10 Do you hold yourself accountable for the dental hygiene care you provide?
- 11 Do you maintain an aseptic practice operatory?
- 12 Are you familiar with CDHA's position on collaborative practice?
- 13 Do you actively promote oral health within your community?
- 14 Do you enjoy being a dental hygienist?
- 15 Do you smile at the end of your day?

IF YOU SAY YES TO THESE QUESTIONS

You are a professional
You are an educator
You are a health promoter

As dental hygienists we have a unique opportunity to make an impact on the lives of others, and promote the dental hygiene profession. Our gifts of caring and competence are reciprocated by the friendships and confidence of the people we serve. Dental hygiene is evolving as a profession that is truly concerned and cares about the health and well-being of all those with whom we come in contact.

Submitted by: CDHA Public Relations Council with appreciation to the Ontario Dental Hygienists Association for permitting modification of their pamphlet "The Dental Hygienist".

Insurance

— the fourth in a series —

A comparison of CDHA sponsored disability plans

The CDHA sponsors two types of disability plans, one provided by Mutual of Omaha, and the other by The Citadel Assurance Company. Both of these companies are well known and respected for their disability programs. The CDHA is pleased to provide the membership with these options. And we have put together a table for your easy comparison of the two plans. There is, of course, a cost difference between them — the better the plan, the more expensive it becomes. Make sure that you know your needs before purchasing any program.

	<i>CDHA Sponsored Plan (Mutual of Omaha)</i>	<i>CDHA Modified Individual Policy (The Citadel Assurance)</i>
Renewal Guarantee	Policy is cancellable for non-payment of premium; when insured no longer engaged in occupation practised at enrolment date; when insured ceases to be CDHA member; if all CDHA policies are cancelled; upon reaching age 65 Step-rate premiums increased if premiums of all CDHA policies are increased.	Except for non-payment of premium policy is non-cancellable and guaranteed renewable to age 65, then conditionally renewable to age 72. Level premiums may not be increased while under age 65.
Definition of Total Disability	Unable, during first 2 years of disability, to perform each and every duty of own occupation. Thereafter unable to engage in any gainful work or service for which qualified. Must be under doctor's care.	Unable to perform the substantial duties of regular occupation and not gainfully employed in other occupation. Must be under doctor's care.
Definition of Partial/Residual Disability	Able to perform some but not all important duties of own occupation. Must be under doctor's care.	Able to perform some but not all substantial duties of own occupation, or unable to perform the duties of own regular occupation for the same amount of time spent prior to disability — in either case resulting in a 20%+ loss of income. Must be under doctor's care.
Maximum Benefit	MI* to age 65 (2 yrs. if disability starts at or after age 60).	MI to age 65 (2 yrs. after age 63).
Maximum Benefit Partial or Residual Disability	50% of MI for up to 6 months.	Proportional benefit up to 100% of MI, to age 65, when disability starts before age 60. Proportional benefit up to 100% of MI, up to 6 months (50% of MI guaranteed) when disability starts at age 60+.
Elimination Period	Choice of 15, 30, 119 or 365 days.	Choice of 30, 60, 90, 120, 180, 365 or 730 days.
Not Covered by Plan	Acts of war. Military Service. Normal pregnancy or childbirth. Suicide or attempts. Flying as pilot/crew.	Acts of war. Military service. Normal pregnancy or childbirth.
Waiver of Premium	Premium becoming due after disabled for 6 months.	Premium becoming due after disabled for 3 months with retro refund to first day of disability.
Special Features	Rehabilitation Minimum payments for specific accidents.	Rehabilitation. Premium refund in event of accidental death.
Options	AD & D** up to \$250,000.	AD & D up to \$250,000. COLA*** up to 8% a year.

*MI Monthly Income

**ADD & D Accidental Death & Dismemberment

***COLA Cost of Living Allowance



Photo compliments of Tourism Victoria

3rd Annual CDHA Professional Conference

Victoria, British Columbia — June 6-8, 1992
The Dental Health Behaviour and Needs of the Older Adult

June 2-6, 1992

Annual Session

Saturday, June 6

CDHA Board of Directors (observers welcome)

Wine and Cheese — President's Reception and registration

Sunday, June 7

a.m.

will feature Keynote Speaker:

Dr. Asuman Kijak, PhD — Professor, School of Dentistry, University of Washington.

"Quality of Life and Aging: Does Dental Health Make a Difference"

A Seniors Forum

Needs Assessment from the Seniors Perspective — What are their needs? What do they want from the Dental Hygienist?

(tentative)

Dental Epidemiology of the Older Adult

(tentative)

p.m.

Dr. Asuman Kijak, PhD.

"Behavioural Techniques to Improve Oral Health Status and Knowledge of Older Adult"

and

Periodontist

- new research
- risk factors for periodontal disease in older adults
- managing and motivating hygiene needs
- modifying standard preventive procedures to the older adult

(tentative)



and (tentative)

evening

Monday, June 8

a.m.

Pharmacologist

- drug and health related problems — contraindications

Potlatch — Dinner in a Long House with native foods prepared in the traditional manner, plus native dancers.

(tentative)

Claire Lightfoot — Registered Dietician/Nutritionist

"Current Issues in Nutrition"

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Chris Clarke, DDS

"Root Caries"

Lunch in the beautiful Crystal Gardens

p.m.

Sharon Compton, DipDH, BS, MA — Assistant Professor, Division of Dental Hygiene, University of Alberta.

"Implants" — with a focus on the hygiene maintenance of the implant fixtures and the considerations and implications for the older adult.

*Alternates,
— all day*

- commercial tables
- posters/videos/displays
- papers presented by dental hygienists
- workshop — focus groups for dental hygiene interest groups



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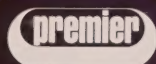
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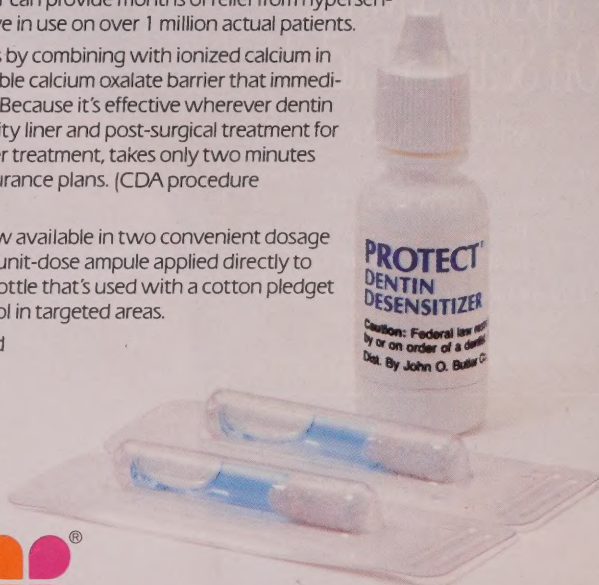
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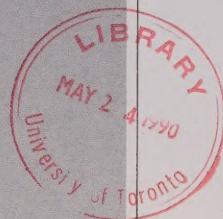
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Symposium 89 Issue



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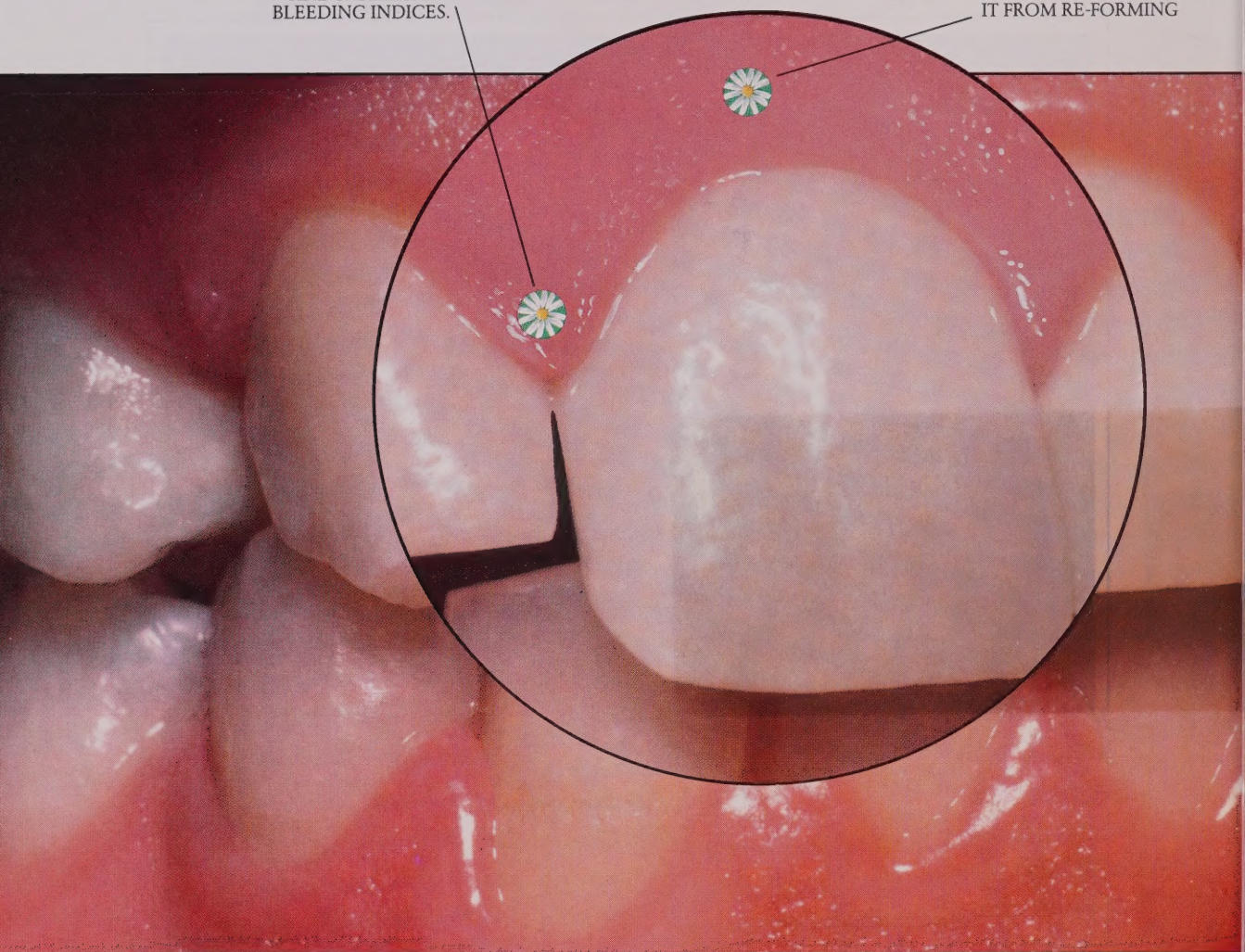


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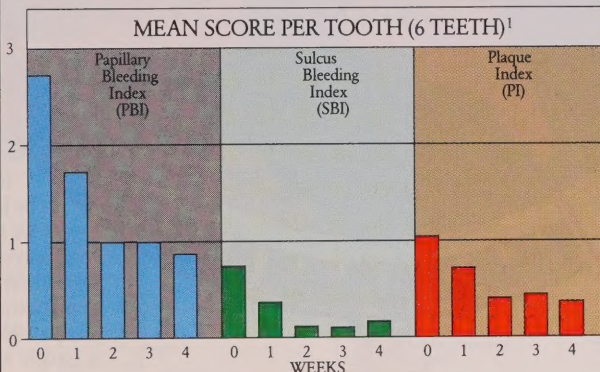
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Klewansky, P. and Vernier, D. Sanguinaria and the control of plaque in dental practice. Compendium of Continuing Education in Dentistry. Supp. 5, S94-97, 1984. Data on file.

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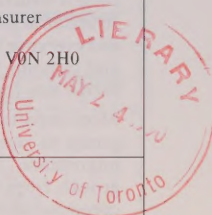
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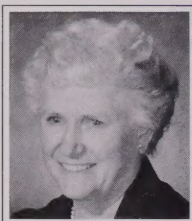
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PRESIDENTS' MESSAGES



*Wilma Motley
IDHF President
1986-1989*

Fait Accompli

It is usually more productive to envision the future and be innovative, yet the past should not be completely disregarded, for it is often the basis for progress. Therefore, being retrospective on occasion is a proper action, especially for someone who has been a participant in those events.

In one way or another I have been a part of International Symposia on Dental Hygiene since their inception, and very involved for the last fifteen years. They have been good years.

Sometimes progress was slow, but always sure, and since 1983 the tempo has increased, much to my delight. The last three years, the first for the International Dental Hygienists' Federation, have been especially rewarding for the formation of that organization had been a primary goal.

The First International Symposium on Dental Hygiene, sponsored by the American Dental Hygienists' Association as an opportunity for its members to travel as well as enjoy new learning experiences, brought together dental hygienists from many countries. Mutual concerns kept them together and drew others to the following symposia, and it was natural they should form a structured organization. Actually, it was quite a loose structure at the beginning, but strong, and dedicated leadership, and everyone's determination to bridge differences in languages and customs, kept it intact until the time was right and the IDHF was formed.

Most important, I believe, we have advanced from a quite silent group to one of active discussion and interaction; next in importance, we have experienced continuous membership growth from seven to thirteen countries plus individual and corporate members; we have augmented one page of Rules and Procedures to several pages of a growing Constitution and a Procedural Manual both of which change regularly to meet our expanding needs; we have amplified our symposium program from a few single speakers to multiple sessions of all kinds; and we have enlarged our workforce from a few individuals doing most of the work to many workers enjoying being a vital part of the Federation.

Plans for the future are grandiose compared to 1971, but they are based on today's world, planned by future oriented dental hygienists. We of the past feel that we have given them a solid foundation on which to build, and if we cannot see quite as far ahead as they can, we believe in their abilities and support them. We who have had our day in the sun are allowed to have a twinge now and then that we are no longer a part of the action, but we know it is always so, and someone once looked at us with the same thoughts. We also know that something else will come along to fill the emptiness.

The 1989 International Symposium will take its place in History as the best one yet, as has each symposium in its time. We are each grateful to the many dental hygienists who have given so much to bring this International Dental Hygienists' Federation and its Symposiums to their present high standards of excellence.

Wilma Motley, RDH
Immediate Past President



*Patricia Johnson
IDHF President
1989-1992*

Dear Colleagues:

On behalf of the IDHF Board of Directors and participants, I thank the Canadian Dental Hygienists' Association for hosting the 11th International Symposium on Dental Hygiene. Thanks also are extended to the many people who helped to organize this very successful event.

We left Ottawa with our sense of belonging to a global community renewed and commitment to dental hygiene revitalized. We have memories of an outstanding scientific and

social program and of having refreshed old friendships and made new ones.

As in the past, this Symposium fostered the growth of the dental hygiene profession. We came together to share our histories, discuss our present, and plan for our future. Through a series of panel discussions, workshops, and individual presentations, issues were examined from the perspective of broad sociodemographic, epidemiologic, and politicoeconomic trends and changes, to more specific aspects of dental hygiene research, education, regulation, and practice. Guest speakers challenged us to take a more proactive stance, convert potential crises into opportunities, examine the impact of our actions by setting goals and objectives and evaluating outcomes, and above all, work toward the achievement of health through oral health. The reports presented at the conclusion of the Symposium indicated participants had responded to the challenges.

The IDHF Board of Directors is also committed to meeting the challenges for they are consistent with the stated purpose of IDHF — namely, to promote access to quality preventive oral health services to all people, as part of total health, and to represent and advance the profession of dental hygiene on a non-governmental world-wide basis. Immediate objectives are directed to the organizational development of IDHF and enhancement of the image of the dental hygienist.

As President, I will act on the principle that dental hygiene has the responsibility for planning for the profession. This responsibility involves 1) delineation of dental hygiene's roles in health promotion and the service delivery system, 2) provision of sound education of dental hygienists for those roles to ensure quality in the delivery of dental hygiene services, 3) regulation of the supply and conduct of practitioners to assure efficient use of resources and competence, 4) collaboration with other interest groups in planning for and providing effective oral health services, and 5) advocacy of the public interest.

The theme for the 1992 Symposium — Dental Hygienist: From Auxiliary to Colleague — is consistent with this principle. Join us in the Netherlands for an equally stimulating and uniquely enjoyable event.

Yours sincerely,

Patricia M. Johnson

Patricia M. Johnson, RDH, MSc.
President

RECOMMEND TRIPLE PROTECTION AQUA-FRESH FOR THE WHOLE FAMILY.

THE TOOTHPASTE THAT HELPS DEFEAT YOUR PATIENTS' TOUGHEST ENEMIES.

When counselling your patients about proper oral hygiene, you can recommend Triple Protection Aqua-fresh® with confidence. In the fight against cavities, bad breath and plaque, Aqua-fresh earns its stripes every day. Its unique formula has been proven effective, time and time again. The clinical data speaks for itself.

Have a look at this encouraging evidence:

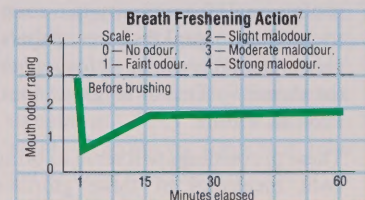
1 PROVEN CAVITY REDUCTION.

Percent reduction in DFS*				
(Aqua-fresh anticaries system vs. non-fluoride control) ¹⁻⁷				
DFS	Control	10.20		
	Test	7.89	23%	
DFS	Control	8.27		
	Test	7.02	15%	
DFS	Control	7.36		
	Test	5.31	28%	
DFS	Control	3.18		
	Test	2.54	20%	
DFS	Control	4.94		
	Test	2.77	44%	
DFS	Control	10.20		
	Test	7.57	26%	
DFS	Control	8.27		
	Test	6.85	17%	

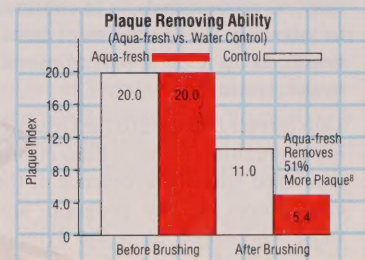
*Decayed filled surfaces



2 FRESHENS BREATH AND REDUCES ORAL MALODOURS.



3 HELPS REMOVE HARMFUL PLAQUE.



Recognized by
the Canadian
Dental Association.



REFERENCES: 1. Council on Dental Therapeutics: JADA 97: 80 1978. 2. Mainwaring PJ Naylor MN: Caries Res 12:202-212. 1978. 3. Glass RL, Shiere FR: Caries Res 12:284-289. 1978. 4. Naylor MN Glass RL: Caries Res 13:39-46. 1979. 5. Peterson JK Caries Res 13: 68-72 1979. 6. Glass RL J Clin Prev Dentistry 3: 6-8 1981. 7. Reference Data on File Beecham Canada Inc. 8. Lobene, R.R., Soparkar, P.M., and Newman, M.B., "Plaque Removing Effectiveness of Brushing with Dentrifice or Water," IADR Program & Abstract 62: No. 266, 1983.

*T.M. Reg'd.

IN APPRECIATION ...



Dale Scanlan

In July, the 11th International Symposium on Dental Hygiene attracted over 500 oral health professionals from twenty-two countries. Guest speakers, free papers, videos and table clinics all focused on the theme: — Dental Hygiene: Past, Present, Future.

These proceedings will serve to bring back memories of those glorious summer days in Ottawa, Canada; help solidify the framework that was begun of person-to-person networking and remind us that our collective duty, as professionals, is to continue to encourage the promotion of dental health, as an integral part of overall health, worldwide.

I am forever indebted to the Organizing Committee, whose selfless efforts combined with the excellence of the contributors to the program and those who joined us at the Symposium made it an outstanding success.

With Fond Memories,

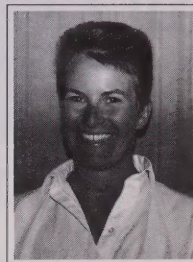
Dale

Dale Scanlan, RDH
Organizing Committee

The 11th International Symposium Organizing Committee



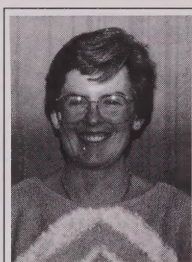
Diane McCambly



Joan Degan



Cindy Kuchynski



Kathleen MacDonald



Ninfa-Anne Nicol



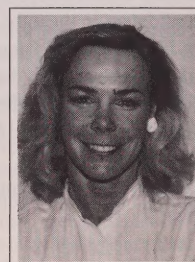
Joanne Buchanan



Chris Ryan



Lisa Lacharity



Kathy Hogan

A Special Thank-you to the following people for their contributions

Patricia Fortier
Pre-Symposium Workshops

Sandra Healy
Program Book Development

Janice Williams
Pre-Symposium Tour

Jacklyn Ferguson
Pre-Symposium Tour

Rachel Lantaigue
Board Meeting Co-ordinator

Michelle Perreault
Board Meeting Co-ordinator

France McKenzie
Post-Symposium Tour

Diana Farrell
Post-Symposium Tour

Susan Maga
Program Book Development

INTERNATIONAL LIAISON COMMITTEE/ INTERNATIONAL DENTAL HYGIENISTS' FEDERATION

OBJECTIVES OF THE INTERNATIONAL DENTAL HYGIENISTS' FEDERATION

1. To promote access to quality preventive oral health services to all peoples.
2. To represent and advance the profession of dental hygiene on a non-governmental, worldwide basis.
3. To promote and co-ordinate the exchange of knowledge and information about the profession, and its education and practice.
4. To raise the level of awareness of the public that oral disease can be prevented through proven regimens.
5. To foster exchange of dental hygiene human resources.

Adopted June 27, 1986

In 1970 the American Dental Hygienists' Association began to sponsor continuing education/scientific sessions in foreign countries for the benefit of ADHA members. Foreign tour arrangements were an integral part of this program, and members of the dental profession and dental hygiene profession, if one existed, in the local countries were invited to attend these scientific sessions. In the early 1970s national associations known to exist, and in whose country an ADHA session had been held, were asked if they believed this ADHA program could

become a truly international event with sponsorship determined by invitation from a particular country. The answer was affirmative, and since that time International Symposia on Dental Hygiene have been held in Canada, Japan, Norway, Netherlands, Sweden, United Kingdom and United States. Guidelines for conducting the Symposia were developed and adopted by the International Liaison Committee on Dental Hygiene.

The International Liaison Committee (ILC) formed naturally from a desire of the countries involved to communicate with regard to evaluating previous symposia and to seek guidance in developing future symposia. The International Liaison Committee consisted of national association representation from Canada, Japan, Norway, Netherlands, Sweden, United Kingdom and United States, with Wendy Leech (UK) as its first chairman. Three factors seemed to be important to requests from other countries to become members of the International Liaison Committee: 1) increasing awareness internationally regarding the International Symposium on Dental Hygiene; 2) knowledge of the formation of an International Liaison Committee; 3) increasing development of dental hygiene or similar schools in developed and developing countries.

At the 1977 ILC meeting in Sweden fundamental guidelines for membership in the ILC were proposed, and also that a study of the need, goals, and membership qualifications of an expanded ILC and/or an international federation of national dental hygiene associations be undertaken.

A special committee was appointed for the purpose of developing a constitution for an International Dental Hygienists' Association. In 1981 the proposed Articles and Regulations were accepted in principle by the ILC, and were revised and circulated to all ILC members before the 1983 meeting.

At the 1983 meeting in Philadelphia, representatives of the ILC expressed their appreciation of the revised Articles and Regulations for the formation of an IDHA, but requested they be simplified before acceptance. They indicated their intent of accepting simplified rules and forming the IDHA in 1986 at the meeting in Oslo, Norway.

These representatives also expanded requirements for ILC membership; opened ILC meetings to all interested individuals; broadened officer eligibility; authorized a subscription assessment; and created the elective office of Secretary/Treasurer. Representatives accepted the proposal of a newsletter and directed that it be a quarterly publication mailed to the official representative of each member country, who would then be responsible for sharing its news with the general membership in that country.

After intensive work on the proposed Rules and Procedural Manual, the International Dental Hygienists' Federation was founded June 28, 1986 during the Tenth International Symposium on Dental Hygiene, in Oslo, Norway. The seven founding countries were joined at the chartering by new member countries of Australia, Denmark and Switzerland. First officers of the Federation

were Wilma Motley, President (USA); Patricia Johnson, Vice-President, (Canada); and Jo Gardner, Secretary/Treasurer, (Canada).

The first act of the new Federation was to adopt a policy statement supporting the statement of the United Nations Universal Declaration of Human Rights of the International Bill of Human Rights. In the two years since the founding meeting committees have been appointed; newsletter content has been enlarged; and communication between members has increased. Korea has been accepted as an IDHF member, and Italy, Nigeria and Portugal have requested applications. The President of the Federation officially represented it at the 1988 meeting of the American Dental Hygienists' Association, and the Vice-President represented it at the

Canadian Dental Hygienists' Association 1988 annual session.

The Federation is beginning to establish an international professional profile preparatory to assuming a strong leadership position in the international professional world. The IDHF is also completing the collection and tabulation of data on worldwide dental hygiene education, licensure, practice and major issues of concern so that it will be recognized as the international dental hygiene information clearing-house. There is every indication that the Federation will continue to grow and will serve not only its members but other segments of the world's population by promoting access to quality preventive oral health services and raise the level of awareness of the public that oral disease can be prevented.

Considering that the IDHF's active membership is composed of national dental hygiene associations, what does the International Dental Hygienists' Federation mean to the individual dental hygienist? Commitment to care and mutual concern about the profession are shared by every dental hygienist throughout the world and these issues are now being recognized and addressed on an international basis through the strength of an established organization. The profession's growth potential will expand through this unity and the increased understanding of other cultures. As a result, each individual can feel the personal satisfaction of having been an influential part of these exciting opportunities to meet the Objectives of the IDHF. ■

Wilma E. Motley, RDH
March, 1989

INTERNATIONAL SYMPOSIA ON DENTAL HYGIENE

1970 Pisa/Florence/Rome, Italy. Optimum Servitium — Optimum Benefactum. Irene Navarre, Program Chairman.

1971 Montreaux, Switzerland. Oral Health; An International Concern. Judy Pederson, Program Chairman.

1972 London, United Kingdom. Meeting the Dental Needs of the '70s. Ann Dinius, Program Chairman.

1973 Amsterdam, The Netherlands. Comparative Analysis of National Trends on Operating Dental

Auxiliary Utilization. Irene Woodall, Program Chairman.

1975 Tokyo, Japan. The Roles Played by Dental Hygienists in Each Country in the World and Their Future Changes and Development. Fumiko Sasaki, Organizing Committee Chairman.

1977 Stockholm, Sweden. Plaque Control. Ingalill Woxen, Organizing Committee Chairman.

1979 Vancouver, British Columbia, Canada. Life Long Learning. Joan Voris, Organizing Committee Chairman.

1981 Brighton, United Kingdom. The Way to Dental Health. Ann Round, Organizing Committee Chairman.

1983 Philadelphia, Pennsylvania, USA. Dental Hygiene: Today — Tomorrow. Sherri Dunbar/Carolyn Thompson, Organizing Committee Co-Chairmen.

1986 Oslo, Norway. Dental Hygiene for Everyone. Inger Lise Bryhni/Elisabeth Kolbjornsen, Organizing Committee Co-Chairmen.

1989 Ottawa, Ontario, Canada. Dental Hygiene: Past, Present, Future. Dale Scanlan, Organizing Committee Chairperson.

You spend a lot of time explaining proper brushing

Now you can give your patients a brush that will help them remember

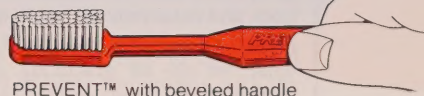


The bevels on the new *PREVENT*™ Tooth and Gum Brush help position the brush at the proper 45° angle along the gum line, for superior plaque removal.

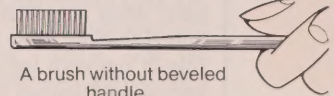
The beveled handle is designed to make it easier for your patients to understand and remember proper brushing technique.

Johnson & Johnson's *PREVENT* Tooth and Gum Brush has other features that most dentists and hygienists recommend — 4 rows of soft, end-rounded bristles that are .008 in diameter, an elongated neck and a narrowed head for safe, comfortable brushing. Available in Adult 35 or Adult 40.

Make *PREVENT* a part of your oral hygiene program today. Call 1-800-361-4231 for more information, or speak to your dental dealer.



PREVENT™ with beveled handle



A brush without beveled handle

PREVENT™ TOOTH AND GUM BRUSH

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DENTAL HYGIENE: PAST, PRESENT, AND FUTURE

All of us who attended the 11th International Symposium on Dental Hygiene came away much richer for having participated in a conference that will no doubt have global impact on the practice of Dental Hygiene. We shared our hopes and aspirations with colleagues from all over the world. We had the opportunity to rub shoulders with dental hygienists who have made significant contributions to our history and our education. We made friendships that will stand the test of time.

What did we learn that we could take back to our respective national organizations and that we could use within our personal mode of practice back home? Many became aware that not all countries practice dental hygiene in the same fashion — indeed there are often variances within a particular nation primarily due to regional legislation. We learned that there are countries who need the support of other dental hygienists to maintain their educational standards and guard against preceptorship. We were treated to a walk down memory lane in the Hall of History. The table clinics, that outlined the various historical events leading up to present-day practices, placed in perspective the tremendous contributions and achievements made by our predecessors. We confirmed that what we do as practicing dental hygienists is valid and absolutely necessary for overall health promotion. Most importantly, we determined that we must take a decisive role in our own future if we are to survive and flourish as a profession.

For those less philosophical, there were seminars on practical procedures for the office, new product



IDHF Board of Directors

availability, validation of currently accepted practice and new approaches to clinical research. Looking at the program guide, it immediately became obvious that dental hygiene is practiced in many forms, in a large variety of settings. If one were searching for a career option or an alternative setting there were many mentors available.

The diverse personalities of the participants accentuated the international flavor of the symposium. What a pleasure it was to see the Koreans in their colorful national dress or to chat with the Japanese through their interpreter. How very impressed we all were that our colleagues from Africa, South America, Europe, Asia and Australia attended. The distances travelled by a larger percentage of our colleagues were quite considerable and indicative of their dedication to our profession.

If there is to be a criticism regarding the symposium, it is that there was so much to see and do, consequently there was always something you'd

hope to see or hear but were tied up elsewhere! There definitely was no lack of choice. Just so much to choose from!

As we gaze into our future, dental hygienists can be proud that we have peers who had enough forethought to create and sustain our national organizations, and who could look beyond their own horizons to give birth to the IDHF. While we struggle within our national boundaries, the IDHF will speak for us globally. How can we as individuals promote the cause? Become an active member of your national organization and a supporting member of IDHF. Numbers matter.

The Netherlands will host the next symposium. Now that we have explored our past, and come to terms with our present, it is time to deal with the future. The theme for THE HAGUE is "From Auxiliary To Colleague". What a goal! Let's try to be there to meet the challenge.

Fran Cotton, Editor
CDHA Journal

SYNOPSIS OF THE INTERNATIONAL DENTAL HYGIENISTS' FEDERATION BOARD OF DIRECTORS' MEETING June 26-30, 1989

Wilma Motley presided over the International Dental Hygienists' Federation (IDHF) Board of Directors' Meeting which was held in conjunction with the 11th International Symposium on Dental Hygiene. The Board of Directors (BOD), comprised of officers and directors from the eleven Member Organizations, considered matters which addressed membership, purpose, and administration.

Membership

One of the first actions taken by the BOD was the acceptance into membership of two additional organizations, the Italian Dental Hygienists' Association and the Nigerian Dental Therapists' Association. The other Member Organizations are from the countries of Australia, Canada, Denmark, Japan, South Korea, the Netherlands, Norway, Sweden, Switzerland, United Kingdom and the United States.

Two new categories of affiliation were formed: Individual Membership and Corporate Associates.

An Individual Member category was developed for dental hygienists who are members of an IDHF Member Organization. The fee for membership is \$50 per year.

While the legally recognized title of the profession need not be "dental hygienist", both individual and organization applicants must meet the IDHF definition of dental hygienist. The definition adopted by the BOD is:

"A dental hygienist is a health professional and is graduated from a

recognized school of dental hygiene who, through clinical services*, educational, consultative planning and evaluation endeavours, seeks to prevent oral disease, provide treatment for existing disease, and assist people in maintaining an optimum level of oral health. Dental hygienists are health professionals whose primary concern is the promotion of total health through the prevention of oral disease.

Corporate Associate status entitles a corporation to receive the IDHF newsletter, formal recognition at the IDHF Opening Ceremonies and annual recognition in the IDHF newsletter. The annual fee for Corporate Associate was set at \$500.

Paralleling the 11th International Symposium Theme of Dental Hygiene: Past, Present and Future the BOD deliberated on issues that impact on each of those time periods.

Past

The History of the International Liaison Committee/International Dental Hygienists' Federation, written by Wilma Motley, was adopted as an official document of the Federation upon revision. Each Organization Member will receive one copy of The History of the ICC/IDHF. Additional copies will be available for purchase.

Present

A purpose statement was adopted. It reads: The purpose of the International Dental Hygienists' Federation is to promote access to quality preventive oral health services as part of total health to all peoples, and to represent and advance the profession of dental hygiene on a non-governmental, world-wide basis.

The clause "as part of total health" brings the Federation in line with the philosophy of the World Health Organization that considers oral health an integral part of total health.

The BOD and Symposium attendees had the opportunity to discuss

BOARD OF DIRECTORS JUNE 26-30, 1989

Officers

Wilma Motley, President
Pat Johnson, Vice-President
Jo Gardner, Secretary/Treasurer

Directors

Australia
Jean D. McNicol
Sue Aldenhoven

Canada
Sharon Amer
Ailsa Wood

Denmark
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United Kingdom
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Eveline Gray

United States
Connie Tussing
Ruth Nowjack-Raymer

issues of importance to the global dental hygiene community with the Director of the World Health Organization, Oral Health Unit, Dr. David Barmes. Dr. Barmes met with the IDHF and CDHA, was the Keynote Speaker and served as a panelist during the Issues Workshop. The BOD voted to maintain continuing liaison with the World Health Organization.

*Basic clinical services include scaling, polishing, applying preventive materials, e.g. fluoride, pit and fissure sealant."



Delegates from Korea

Future

The BOD worked on several projects over the past 3 years, since the Oslo meeting, which are instrumental to the future of dental hygiene. In addition to committee assignments, the Directors completed two independent surveys; one documenting the scope of practice, education and issues for each country; the other an assessment of the external and internal factors which influence the development of IDHF.

The document "International Survey on the Profession of Dental Hygiene", conducted and co-authored by Pat Johnson, is being reviewed by each Member Organization for acceptance as an international database. The BOD endorsed the principal of conducting periodic international surveys of the profession.

The internal and external appraisal completed by the Directors was used as background information for the Strategic Planning Process (discussed in more detail elsewhere in The Proceedings). Operational goals which emanated from the Strategic Planning Process were referred to the Executive Council for consideration.

Administration

The BOD deliberated on numerous administrative matters which will serve to strengthen the Federation. The actions taken include:

- The Executive Council will meet at least once between Symposia.

- The office of Vice-President was changed to two positions, 1st and 2nd Vice-Presidents.
- Roles and Responsibilities of IDHF Directors Guidelines were adopted.
- The category of Honorary Life Member was created.
- Guidelines for Planning the International Symposium on Dental Hygiene were approved.
- The budget was adopted and included revenue projections for corporate associates, individual members and increased member organization subscription fees.
- The fiscal year was established as January 1 to December 31.

The BOD also elected officers for the 1989-1992 term, they are Pat Johnson, President; Ruth Nowjack-Raymer, 1st Vice-President; Inger-Lise Bryhni, 2nd Vice-President; and Jo Gardner, Secretary/Treasurer.

The invitation of the Netherlands to host the 12th International Symposium on Dental Hygiene was accepted. The Symposium will be held July 1-4, 1992 in The Hague. The theme is "The Dental Hygienist: From Auxiliary to Colleague".

NOT ALL WORK AND NO PLAY

For some, the symposium was a social event with some excellent seminars interspersed! And what a social event it was! The pre-symposium tour took a truly international group to one of Canada's most famous tourist spots — Niagara Falls — not a sight to be

missed for first-time visitors to Ontario. A shopping excursion in downtown Toronto ensured that participants purchased an ample supply of souvenirs!

The scientific portion of the symposium was well balanced with opportunities to visit old friends and make new ones. The Organizing Committee planned each event to have a distinct Canadian flavour. The proceedings began with a welcoming ceremony that included a parade of provincial flags, a serenade by the local pipe band and greetings from Ottawa dignitaries. A reception followed, where everyone was able to share in a birthday cake celebrating CDHA's 25th anniversary.

The next evening was a delight with something for everyone and a taste to please everyone's particular palate! The 'National Food & Spirits Gala' displayed regional delicacies from each of the ten provinces and the territories. No one went away hungry! The evening concluded with dancing and door prizes representative of our Canadian heritage.

The weather co-operated beautifully for the barbeque held on Victoria Island in the heart of Ottawa. Beef from Western Canada was cooked in the great outdoors while dental hygienists and their guests soaked up the relaxed atmosphere and enjoyed each other's company.

Canada Day on Parliament Hill was spectacular (if crowded!). An experience not to be missed by visitors and one that every Canadian should share at least once.

Those dental hygienists and companions who participated in the post-symposium tour had a wonderful time getting to know each other and seeing the sights of Quebec; a great way to experience first-hand the unique culture of French Canada. The tour was the perfect way to unwind after the hectic schedule of the symposium.

The 11th International Symposium on Dental Hygiene was the consummate combination of work and play. ■

PROGRAM SUMMARY

Saturday June 24th — Tuesday June 27th

Pre-symposium tour TORONTO-NIAGARA FALLS

Sunday June 25th + Monday June 26th

Board Meetings of International Dental Hygienists' Federation (IDHF)

Canadian Dental Hygienists' Association (CDHA)

Tuesday June 27th

IDHF + CDHA meetings continue

Dr. D. Barmes (WHO) address to Directors

IDHF/CDHA Presidents' Reception

Wednesday June 28th

Pre-Symposium Workshops — Sponsored in part by the Canadian Fund for Dental Education (CFDE)

- Getting Started in Research
- Clinical Photography — Kodak, Canada
- Geriatric Dentistry
- Continuing Education — You're in Charge
- Education — Are We Ready for 2001?
- The Role of the Dental Hygienist in Community Health
- Professional Writing: Letters, Papers and Book Reviews
- Motivation and Me!
- New Concepts in Dental Materials
- Dollars and Sense

OPENING CEREMONIES AND RECEPTION

Thursday June 29th

Keynote Speaker: Dr. David E. Barmes

Chief of Oral Health, World Health Organization, Geneva, Switzerland

Topic: Dental Hygienists as Health Care Providers

Presentation available on audiotape.

Past — Hall of History

Table clinics depicting the development of dental hygiene in the member countries of IDHF around the world.

Countries Participating

Australia	Japan
Canada	The Netherlands
Denmark	Sweden
U.K.	Switzerland
Italy	U.S.A.

Present — Select Papers: Dental Hygiene Today

A delegate from each member country presented a short paper on the current status of legislation, education and registration.

Facilitator: Ailsa Wood Director, IDHF Canada.

Presentation available on audiotape.

Countries Participating

Australia	Norway/Denmark
Canada	Sweden
Italy	Switzerland
Japan	U.K.
Korea	U.S.A.
The Netherlands	

Future — Panel Discussion: Major Issues and Trends: What will be the Future of Dental Hygiene?

What should we expect from tomorrow? Will our roles be different from today?

Broader issues affecting the health of the public and in turn the dental hygiene profession including demographics, delivery of dental health services, social issues, consumerism, political and economic issues were discussed.

Facilitator: Patricia M. Johnson, RDH, BSc, MSc

Reactor: Dr. David E. Barmes

World Health Organization

Panelists: Dr. D.W. Lewis DDS, DDPH, MScD, FRCD(C), Professor of Community Dentistry and Director of Dental Care Services and Epidemiology Research Unit, Faculty of Dentistry, University of Toronto addressed the topic "Epidemiologic Trends and Dental Care Issues" (relevant to future dental hygiene).

Ms. Catherine Fooks, BA, MA Research Co-ordinator (Health Policy) for the Centre for Health Economics and Policy Analysis, Department of Clinical Epidemiology and Biostatistics at McMaster University addressed "Emerging Political and Economic Trends Affecting Dental Hygiene".

Dr. Jane Fulton, MSc, PhD, Professor of Strategic Management and Health Policy, University of Ottawa, addressed the topic "Social Trends and Issues including Consumerism".

Presentation available on audiotape.

— Free Papers

Written and presented by dental hygienists from around the world, focusing on scientific, clinical and personal growth aspects of dental hygienists (see abstracts).

— Commercial Exhibits

— The Canadian Food and Spirit Gala

Friday June 30th

Issues Workshops

Four specific workshops were held to discuss and identify objectives, in view of international concern, that will affect the development of dental hygiene as a profession world-wide. Using these objectives as a basis, a fifth workshop developed the strategies to meet future

directions and activities of the International Dental Hygienists' Federation.

Each presentation available on audiotape.

Fostering Dental Hygiene Research

Co-facilitated by Michele Darby, RDH, MS and Denise Bowen, RDH, MS

This workshop focused on the roles and strategies of national and international dental hygiene organizations in fostering research. It elaborated on networking techniques for dental hygienists interested in and involved in research.

Dental Hygiene Quality Assurance: Standards of Clinical Practice

Co-facilitated by Ellen Brownstone, RDH, MEd, BSc and Dr. Kathy Newell, GDH, BS, MA, PhD

Participants gained a greater understanding of the concepts and application of a quality assurance/competence assurance model. Some of the issues canvassed regarding the use of practice standards were:

- 1 — establishing Professional Status;
- 2 — developing competence/quality assurance programs; and
- 3 — decreasing malpractice activities.

World-wide Dental Hygiene Education

Co-facilitated by Kate MacDonald, RDH, BS, MEd and Carol Ono, RDH, BA, MEd Candidate

Presenters: Fusako Ejima (Japan), Inger-Lise Bryhni (Norway), Lotti Vialle (Switzerland) and Mary Alice Gaston (U.S.A.)

Representatives from six countries participated in this workshop and described basic dental hygiene education in each country. Included were descriptions of the institutional setting, program length, admission requirement, and the credentials awarded upon graduation. Curriculum and desirable program changes were discussed in light of current dental hygiene roles.

Sponsored by Frank W. Horner Inc. (Viadent)

Regulation and Alternative Practice

Co-facilitated by Anne Bosy, RDH, BSc, MEd and Joanne Clovis, DipDH, BEd, MSc

This workshop focussed on the regulation of dental hygienists in order to identify similarities and differences with scope of practice, supervision and governance. Alternative practice was explored. Areas of concern to dental hygienists were highlighted and the group worked toward developing a strategy to meet the issues identified.

IDHF: Future Planning Workshop

Co-facilitated by Patricia M. Johnson, RDH, BSc, MSc and Connie J. Tussing, RDH, MBA

The objectives identified in the morning workshops for the development of dental hygiene as a profession world-wide, laid the foundation for the fifth workshop. This workshop formulated strategies to meet future directions and activities of the International Dental Hygienists' Federation

Free papers, videos, posters, table clinics (See abstracts).

Special Guest Speaker

Dr. Thomas E. Rams, BSc, DDS, DipPerio Clinical Assistant Professor, Department of Periodontics, University of Pennsylvania. Dr. Thomas E. Rams is a Clinical Assistant Professor of Periodontics at the University of Pennsylvania School of Dental Medicine, and is in the private practice of periodontics in Washington, DC. At the University of Pennsylvania, he teaches in the post-graduate periodontics program, and is actively involved in periodontal microbiology research with Dr. Jorgen Slots.

Topic: Microbiological Diagnosis in Periodontics: Theoretical and Practical Considerations

Sponsored by Colgate-Palmolive International

Presentation available on audiotape.

— Commercial exhibits — (See Page 50 for Exhibitors)

— Barbeque sponsored by Colgate-Palmolive Canada

Saturday July 1st

A Team Approach to Dental Implants

Dr. Don Scott, BSc, DDS, DipPerio; Dr. Rod Johnston BSc, DDS; Nancy Vincent, RDH Nathalie Tremblay, C.D.A.

The hygienist's role in case selection, patient education, and tissue maintenance to assure the longevity of implants was explored.

Sponsored by Nobelpharma Canada Inc.

Presentation available on audiotape.

Summary and Conclusion of Issue Workshops

Closing Ceremonies

Closing remarks by Incoming IDHF President, Patricia Johnson

Sunday July 2nd — Wednesday July 5th

Post-Symposium bus tour QUEBEC CITY-MONTREAL

PRE-SYMPOSIUM WORKSHOPS

Summaries
June 28, 1989

"GETTING STARTED IN RESEARCH"

Co-ordinators: Michele Darby from Old Dominion University in Norfolk, Virginia, and Marine Forgay from Dalhousie University in Halifax, Nova Scotia.

Goal: To assist dental hygienists not presently doing so, to participate in research.

Objectives: To identify reasons why dental hygienists should be involved in research.

- To describe the value of research to the profession of dental hygiene.
- To discuss basic research considerations related to areas such as problem formulation, design, sampling and data collection/analysis.

This workshop was subscribed to capacity, with twenty-five dental hygienists from seven countries participating.

The keynote address entitled "Getting Started in Research" was presented by Michele Darby. Denise Bowen of Idaho State University, Pocatillo, Idaho, made presentations on "Progress to Date" and "Specific Areas in Need of Research". Small group activities followed in which participants identified a wide range of research questions of interest to dental hygiene.

In the afternoon participants each worked in two break-out groups, according to their interest level. The group topics and facilitators were: "Formulating a Research Problem", Peg Walsh, University of California, San Francisco; "Design and Sampling Considerations", Joanne Clovis, Dalhousie University, Halifax, Nova Scotia; "Questionnaire Design and Data Collection", Kathleen Lukken, Weberstall College, Ogden,

Utah; and "Preparation of Researchers", Janice Pimlott, University of Alberta, Edmonton, Alberta.

The workshop concluded with a question and summary session.

Follow-up activities include distribution to participants of a list of names and addresses of all present, the list of research topics generated, a copy of the keynote address and an evaluation of the workshop.

"THE ROLE OF THE DENTAL HYGIENIST IN COMMUNITY HEALTH"

Co-Facilitators: Ms. Jane Mays, Ms. Sharon Amer, Dr. David Barmes

The workshop tackled this topic in two groups which addressed specific aspects of the role of the dental hygienist in community health. The groups reconvened as a whole to discuss and share their opinions.

Community dental health:

- empowers the public to have a positive concept of oral health
- empowers the public to obtain the highest level of oral health
- provides assessment of general and "high risk" groups of the community
- advocates for accessibility to treatment services.

The groups felt that the role of the dental hygienist is that of an educator. This role may require skills and knowledge in research, planning, data collection, education, specialized clinical expertise and health promotion. As an educator the hygienist may also advocate for improved community health courses in dental hygiene schools.

The education of this community dental hygienist begins with a standardized dental hygiene course followed by further courses in

community health such as computers, statistics and social marketing. An integral portion of this extra education would also be a minimum of two years "hands on" experience. The skills attained from this practical experience would be in the areas of communication and social skills.

The list of barriers to dental hygienists presently in this field are that career opportunities and advancement are limited perhaps by opposition and friction with the dental profession. Legislation and regulations of the dental hygienist may also be a barrier.

The lower status and image of dental hygienists in community health was expressed by one group. Influencing this opinion was lower wages as compared to private practice salaries.

The responsibilities of the hygienist in this role are:

- to advocate for interdisciplinary program eg. healthy life styles
- to be a leader in health promotion and prevention
- to be a consultant or manager of programs.

Recommendations to the International Dental Hygienists' Federation

- assure future symposiums provide workshops and speakers on community oral health
- establish a newsletter and provide a section for community oral health so that community dental hygienists can network and keep informed of programs and professional opportunities. This would require IDHF to establish a data bank of qualified hygienists who are employed and interested in the area of community health
- help to equalize the emphasis on community health education in dental hygiene schools

- advocate for a certificate, diploma or degree in community oral health
- promote awareness of the dental hygiene profession
- promote oral health via marketing
- advocate for the reduction of barriers to access to care.

Respectfully submitted,
Jane Mays

CONTINUING EDUCATION — YOU'RE IN CHARGE!

Co-ordinator — Mickey Emmons
Wener RDH, BS, MEd.

With representation from Canada, Colombia, Costa Rica, Sweden, Switzerland and the United States, this workshop exemplified the essence of an international professional gathering.

The session opened with a discussion of the many factors in our individual, work and professional environments that can contribute to obsolescence. It is these many factors that impact upon us as dental hygienists and that subsequently affect our individual decisions regarding participation in continuing education. The participants then examined the strength of their beliefs regarding participation by completing a questionnaire and comparing their responses to those gathered from previous study. A small group activity followed in which ideas were generated regarding changes which they felt would enhance participation. These included:

1. Work more closely with employers, ensuring that they understand the importance of the role dental hygienists play.
2. Work toward more office benefits regarding continuing education.
4. Increase the promotion of continuing education by the professional associations.
5. When programming, consider variety, the importance of active participation, and a thorough description of the program in promotional materials. One par-

ticipant suggested that continuing education participants could greatly benefit by a "star system" similar to movies or restaurants for speakers, thus helping them to avoid inept speakers. What does this tell us about some of our speakers?

6. It was generally felt that if the dental profession, the public and dental hygienist themselves held a positive attitude regarding dental hygiene that this would go a long way to encouraging an increased interest in continuing professional education.

Participants were given a take-home exercise which would help them to examine their preferred learning style, specifically, their degree of dependence, collaboration and independence while learning. Because our preferences are based on what we have experienced, they were encouraged to seek out not only those learning experiences in which they are obviously comfortable, but to stretch themselves and explore other learning styles.

The latter part of the workshop focused upon the options available for learning. These included other-planned and self-planned group and independent learning activities.

There seemed to be particular interest in the concept of an individual office designing a program that would be suited to their specific learning needs. Again, the importance of the Dental Team learning new, high-priority skills was evident. It was accepted that this type of programming would involve a commitment of both time and money, an on-staff organizer who would need to be freed from his or her regular duties for planning, and possibly the expertise of an educator/consultant.

In closing, participants were asked to come to terms with what they would do regarding their professional development by writing down at least one short-term goal (to be accomplished in 1 year) and at least one long-term goal (to be accomplished in 5 years).

The afternoon ended with flashes

flashing as everyone took group pictures as we all said our goodbyes.

EDUCATION — ARE WE READY FOR 2001?

Co-ordinator — Mai Pohlak, DipDH, BA, MEd and Laura Dempster, University of Toronto.

In the interest of maintaining professional competency and projecting the changes in dental health care, the dental hygienist educator, as well as the practising dental hygienist may wish to investigate the function of planned curriculum changes and continuing education in the enhancement of dental hygiene as a profession.

Objectives of the Workshop

- To understand the changes in Dental Hygiene programs in Canada
- To conceptualize change as an agent in curriculum
- To monitor practice standards and the technological as well as scientific changes affecting them.
- To understand the changing attitudes and needs of the dental health care system.
- To develop a critical and honest self-assessment mechanism whereby teaching content and technique may change.
- To propose a personal professional competency program in order to evaluate educational effectiveness and currency of scientific information data as applied in the process of teaching.
- To develop and implement a cybernetic model (method) of curriculum development.

For an indepth summary please write:

Mai Pohlak

GERIATRIC DENTISTRY

Facilitator —
Jenny Thomas, BA, RDH

Goal from workshop: Any oral health program in a Collective Living Centre (C.L.C.), should be approved by the administration of the centre, in order to ensure successful implementation. ■

OPENING CEREMONIES

June 28, 1989

***Opening Ceremonies Address
Maureen Law, MD,
Deputy Minister,
Department of National Health &
Welfare, Government of Canada.***

I am pleased to bring greetings on behalf of the Government of Canada to you, the participants of the 11th International Symposium on Dental Hygiene. I have been informed that there are about 500 people attending from approximately 20 countries. Congratulations to both the symposium organizers and the participants!

I have served in several capacities with the World Health Organization and, from personal experience, I realize the value of international collaboration. So I give a particular welcome to those dental hygienists and other registrants who have travelled from other parts of world to be here today.

I like the theme chosen for the conference — "Dental Hygiene: Past, Present, Future", it reflects a profession on the move. In looking at the past, dental hygiene began in the United States in the early part of the century about 1913. It spread to many other parts of the world including Canada over the past 70 years.

In Canada, the education of dental hygienists began in the 1950s, although dental hygienists, educated mainly in the United States, had been employed here earlier. The purpose of dental hygiene education in the early years was to prepare health-care providers to teach children and adults, in schools and clinics, to care for their teeth. These professionals could also provide basic preventive services in the dentist's office. Hence,

dental hygienists were integrated into the public health and school systems as well as private dental practices.

In looking at dental hygiene in the present we see a young, vibrant and fast-growing health profession which contributes significantly to the health-care system in Canada and many other parts of the world. We know there are many more than 100,000 dental hygienists in 48 or more countries of the world. There are 98,000 licensed dental hygienists in the United States alone and in Canada more than 7,000.

As with other health professions, dental hygiene has grown over the years not only in human resources but in other important ways. It has expanded the clinical services provided to the public. Dental hygienists can be seen as consultants in health promotion and health education, managers of dental programs, and educators and researchers.

The International Dental Hygienists' Federation had 11 member countries, prior to the Board of Directors' meeting just held, with perhaps one or two new members accepted in the last few days during the meeting. However, approximately 48 countries in the world employ dental hygienists and there are a total of 166 member states of The World Health Organization. I can see that your federation has a lot of room for growth! What is the future for dental hygiene and dental hygienists worldwide? I predict continued growth in numbers and roles.

There is a need for more dental hygienists to provide the important preventive dental services. Also, there is a need for dental hygienists to

play an expanded role in the care of those who receive less than equal care such as many of our seniors, the poor, people in rural areas and in chronic-care facilities.

The Government of Canada has fostered the development of young health professions, such as dental hygiene, because they add a special dimension to our health-care system which, we believe, is one of the best in the world. The young professions help to prevent disease and injuries, to rehabilitate those with diseases and injuries, and to promote healthy lifestyles. Health and Welfare Canada has contributed to the development of dental hygiene particularly in the 1980s with the working group on the practice of dental hygiene.

The report of this working group was released last fall and is perhaps one of the most definitive national descriptions of dental hygiene available. This report describes the history, education, regulation and practice of dental hygiene and makes recommendations for future development.

The four reports from this working group — one of which includes clinical practice standards for dental hygienists — are available at the symposium. I hope that these reports benefit dental hygienists in other countries as well as in Canada, and will foster the move towards greater professionalism and greater responsibility to the public. You may also find the second edition of "Preventative Dental Services" of special interest. From its very beginning, dental hygiene has focused on health promotion and disease prevention; thus dental hygiene is in the forefront of the present-day push toward greater emphasis on health promotion.

The concept of health promotion integrates ideas from several arenas — public health, health education and public policy. It represents an expansion of the traditional use of the term "Health Promotion". Health promotion is an approach which complements and strengthens the existing health-care system.

There are those who think "Health Promotion" involves little more than publication of posters and pamphlets. This is a simplistic view akin to thinking of dental hygiene care as only dental instruments and dental floss!

The World Health Organization has a very broad definition of "Health Promotion". "WHO" describes health promotion as the process of enabling people to increase control over, and to improve, their health.

Because of the desire to become more effective, health promotion has become a multifaceted exercise which includes health education, training, research, legislation, policy co-ordination and community development. You can see that health promotion is a great deal more than posters and pamphlets!

Health, including dental health, is directly related to economic status with high-income groups having much better health than poor groups. This is one of the health promotion challenges facing Canadians and I

would venture to say citizens of many other countries.

How do we define health? In the past health has been defined as the absence of disease; in recent years, as a state of complete physical, mental and social well-being. Today, health has a much broader definition. It is a resource which gives people the ability to manage and even to change their surroundings.

It recognizes the freedom of choice and emphasizes the role of individuals and communities in defining what health means to them.

As stated in Canada's "Achieving Health For All" document, "... health ceases to be measured strictly in terms of illness and death." It is not something that comes about merely as a result of treating and curing illnesses and injuries but as a state which individuals and communities alike strive to achieve, maintain or regain.

"It is a basic and dynamic force in our lives, influenced by our circumstances, our beliefs, our culture and our social, economic and physical environments." In making the comparison to dental health, we can say that dental health is much more than the absence of dental disease. As dental hygienists you understand this concept very well.

In developed countries such as Canada, the overall dental caries

rates are declining but this does not mean that we are solving all our dental health problems or challenges.

Many more challenges, such as improving the oral health status of disadvantaged groups, are yet to be solved. I call on you as dental hygienists to play an active and prominent role in searching for solutions to these problems. You have a lot to offer. You can also help bring consumers — your clients — into the decision-making process in matters affecting their health. I have been talking about health promotion initiatives in Canada and dental health or oral health which is the more encompassing term. Based on the Framework of the Achieving Health For All Report, a national steering committee on oral health was established in 1988 to develop national goals and strategies. This committee, on which dental hygienists are represented, aims to raise the level of awareness of dental health challenges and to make proposals to address them.

A discussion paper outlining the key issues, and the goals and strategies for oral health promotion will be released in 1990. I am sure this paper will find its way to your next symposium.

In conclusion, I wish you every success in your symposium over the next three days. ■

KEYNOTE ADDRESS

June 29, 1989

DENTAL HYGIENISTS AS HEALTH CARE PROVIDERS

*Presented by
Dr. D.E. Barmes
Chief of Oral Health
World Health Organization*

The global history of dental auxiliaries with respect to national plans, production and service structures is a sad tale to tell of muddled thinking, piecemeal or short-term planning and baffling or unsoundly-based decisions. Even choosing where to start the tale is difficult, but my choice is the fundamental contrast between the two early major producers and users of dental auxiliaries — the United States of America (USA) and New Zealand (NZ). It may seem strange to contrast two national examples with such a vast difference in population. However, it is in trying to provide a large-scale auxiliary service for a nation, whatever the size, which makes this comparison appropriate; they were also the pioneers destined to see their early approaches copied and adapted by numerous countries.

Both the USA and New Zealand commenced their initiatives in the 1910s and 1920s and their approaches could hardly have been further apart. The main lines of contrast are listed in Table 1.

Almost the only common features were their health education duties and recruitment of females only.

Given the oral health status of the time and the lack of preventive prospects, I think it is not natural bias due to my region of origin, but objective evaluation which formed my opinion that the NZ approach was the more appropriate for the needs and perspectives of those times. Indeed, one could argue on both sides of many of the points of contrast and find fault with one or the other, or both. Type of school, type of qualification given, target popula-



Left to right: P. Johnson, Dr. D.E. Barmes and Wilma Motley.

tion limited by age or by type of care, type of employment and methods of supervision. However, my favouring of the NZ approach is founded on the fact that caries was by far the main oral disease problem of the day. Caries was the principal reason, beyond challenge, for wholesale loss of teeth and extremely high levels of endentulousness and, therefore, the NZ approach, which focused on that problem, was surely the more rational.

What happened to that rational approach we will consider later, but to stay with our historical perspective, it is sufficient to say that not a massive amount happened in other countries to extend these brave, large-scale initiatives and thus to establish, widely, dental auxiliary cadres from the 1910s and 1920s up to the Second World War. Canada developed the hygienist approach in fairly large measure, through training in USA schools, and some of the Pacific Island populations followed the NZ approach. There were adaptations of the latter approach with employment of males, some-

times exclusively, and sometimes both sexes and the development of an assistant dental officer type of training which broadened the scope of the school dental nurse to a sub-set of all the duties of a dentist applied to the population at large.

Rather similar to this category of personnel, which could only loosely be termed an auxiliary, was the dentist II or dentist B type which developed in a number of Asian countries, notably in the Indian sub-continent, and in the Malaysian Peninsula. They had a counterpart also in Europe, where there were a number of countries in which the leadership depended on physicians specializing in oral health — the stomatologists — and a second level of dentist was variably trained to deal with the more mechanistic parts of dentistry.

Lest the canvas be incomplete, there were traditional dental workers, given numerous names, both complimentary and very uncomplimentary, who functioned in the large numbers in many countries, notably in Asia

Table 1: Dental Auxiliary Development in USA and New Zealand

ITEM	USA	NZ
Title of Auxiliary	Dental Hygienist	School Dental Nurse
Employment	Mainly in private practice	In government service only
Target Population	In principle all persons, but in practice mainly adults	All primary school children
Duties	Prophylaxis and health education	Restorative dentistry extractions for several decades and health education
Schools	Usually associated with University Dental Schools	Separate schools belonging to the health department
Qualifications	Diploma or degree and opportunities to obtain post-graduate masters and doctoral degrees	Certificate of proficiency
Supervision	Direct, in principle	Indirect
Other	Variable recording system, dress, equipment and conditions, according to individual private practices	Standard, comprehensive recording system, uniform, equipment and conditions

and Latin America, but were quite numerous in all parts of the world. Again, let me stress that from the assistant dental officer to the traditional practitioner, I have crossed the boundaries of what, strictly, might be termed a dental auxiliary category. However, their existence had, and has, a very large bearing on decisions made about dental auxiliaries and on the structure of oral health in a large number of highly-developed countries and developing countries.

Still in the pre-Second World War period, but back into the ranks of true auxiliaries, we had variable developments of chairside assistants, also variably named from receptionist to hygienist, causing the most delicious confusion in trying to know what actual type of personnel was being enumerated from country to country. They were variably trained also from virtually no training, except by observation and imitation, to quite long formal courses. The same situation, with a little less

variation, applied to prosthetic laboratory auxiliaries who were usually known as dental technicians, but were also called mechanics and, in a few cases, technologists. This cadre gave risk to a variable amount of illegal practice but, in the pre-war times, technicians were still found more in dental practices than grouped in separate prosthetic laboratories.

Returning to the main contrast of an auxiliary service built on hygienists or dental nurses, now usually called therapists, and recalling my opinion that the NZ approach was more appropriate than the USA approach for the "pre-prevention" days, reports

of a large increase in the use of some types of dental auxiliary in the post-war decade showed, and even still show, that more countries choose the NZ approach. There are a large number of variants in the use of either approach and in the scale of use from just a few auxiliaries to a large proportion of the oral health workforce, which makes comparisons difficult, apart from the fundamental problem in actually recognizing the type of auxiliary from the title used nationally. Our latest data is shown in Table 2, after modification of what has been officially reported, where firm data was available beyond that which was included in those reports.

Working from these data in dealing with the post-war period up to the present, a number of observations can be made. The first should surely be that the best-laid plans are overwhelmed by events, in that the rational basis for the NZ approach has been overtaken by the advent of fluoride and other caries preventive measures, as well as control procedures, such as sealants and remineralizing agents. The consequent massive changes in caries prevalence and management have now transformed what was so rational in 1920 and even by 1950/60, to something that appears somewhat bizarre, except in those countries where, for a short period of time, caries increases prior to a preventative response, has required, or will require a temporary therapist service, especially for the schoolchild population. It is mainly in those countries that the therapist approach is still the more common,

Table 2: Number of Countries* using Dental Auxiliaries

Therapist** Type	Hygienist Type	Both	None
55	32	16	73
*The large total number arises from the inclusion of principalities and territories which are not WHO Member States, of which there are 166.			
**Therapist is used to include all categories practising restorative dentistry.			

though changing the approach has been difficult and has still not been achieved in some nations where the caries experience has changed dramatically.

To use or not to use auxiliaries must also be addressed. One cannot ignore the fact that some 40% of countries included in Table 2 use neither the therapist nor hygienist type of auxiliary. A large number of these have an infrastructure of traditional practitioners, and most of the remainder have produced by intent, or in the absence of specific planning, such a large number of dentists that they have sufficient, or are suffering, from excess oral health personnel without developing an auxiliary cadre, or cadres. These elements, desirable or not, must be considered by any national planning authority, and have a fundamental effect on the use of dental auxiliaries. Also, one cannot ignore the attitudes of many, at individual or collective levels, who oppose the use of auxiliaries. No matter how enthusiastic one may be for inclusion of auxiliaries in the oral health team, one must face facts and observe how vital it is to get the strategy for such use right. A good example comes, again, from the NZ situation, as reviewed in the International Collaborative Study of Dental Manpower Systems (ICSI) in the early 1970s. This study, in its comparisons of the school dental services in Norway and NZ, showed that they were similarly excellent in their coverage and quality, though if one were forced to give a first prize to either it would have gone, by a very slight margin, to NZ; a finding which would support the wholesale use of school dental nurses. However, when one compares the edentulous rates of 36% of the 35-44 year sample in NZ with 5% in Norway, one sees that something was amiss in what happened between school and middle age. Let us not hasten to conclude, however, that this finding condemns

the use of therapists. Rather, it indicates that something in the transition strategy for services, financing and health education was missing from schoolchild to adult care in the system which used auxiliaries, a factor which might or might not have been related to the personnel structures.

Next comes the extent of use of auxiliaries where they are used. Reports show that in some 40 of the 103 countries reporting the use of either therapists or hygienists, auxiliaries either outnumber the dentists or are more than 50% of the number of dentists reported, and in a further 20, there is a moderate auxiliary use — between one quarter and one half of the number of dentists. It should not be forgotten, however, that a number of these countries have only a few dentists or auxiliaries. It is an irony that one fifth of the world's population is served by over 70% of the dentists and 83% of the auxiliaries, and that auxiliaries account for just over one quarter of the dental workforce in the highly developed countries compared with one seventh in the developing countries.

Before looking to the future, I would like to conclude the historical part of this review with comments on certain trends and developments, some of which apply in a grouped sense, while others are country-specific. They will demonstrate how hard it is to get things right and keep them right in the area of auxiliary production and use.

Whatever has been the technical basis for legislation, rules and conditions governing the training, employment and services related to dental auxiliaries, there has been an unsatisfactory underlying sense of limitation related more to making sure things do not get out of control, rather than to means of providing the best oral health care to the public.

Early in the history of auxiliaries, there was the celebrated limitation that hygienists could legally remove supragingival, but not sub-gingival calculus; a regulation which would require extremely clever compliance and could have given the basis for a modern, collective version of the "Merchant of Venice". More recently, the main response to decreasing caries prevalence and, thus, to diminished complexity of restorative care has been to reduce the range of therapists' duties and their rate of production in comparison to that of dentists, a response which does not seem to give salience to appropriateness.

The tendency to limit production of therapists and hygienists to females dates from the period in which most women either did not engage in salaried work at all, or did so only for a few years. As that situation has changed, strategies do not seem to have reacted, adequately, to allow for the much longer average working life of female auxiliaries, the return to the workforce of many females after interruption related to child bearing and the need for a career structure.

Country-specific examples of the difficulties involved in getting things right for dental auxiliary services, which are by no means exhaustive, come from Australia, Cuba, Hong Kong, Papua New Guinea, Sri Lanka, and Sudan.

In Australia, after several decades in which the use of auxiliaries in school dental services was viewed as unacceptable, the NZ approach was introduced just as conclusive evidence became available to demonstrate that caries prevalence was on the wane. Fortunately, the original plan to train some 5,000 therapists by 1980 was not followed, but unfortunately, the decision to place most auxiliary schools in larger cities was, with the effect that the existing urban concentration of oral health person-

nel was intensified rather than complemented. The excellent schools opened so recently in this programme have either closed, or drastically reduced their activity. The total number of therapists employed in 1988 was 1,109. Attempts at direct supervision were a feature of the Australian approach which seems to have been variably applied, as in the case of hygienists.

In Cuba, an early and enthusiastic decision to train therapists changed considerably towards training of dentists, when it was realized that the demand for university education was great, and became an important social issue. Clearly, the driving force was related to elements of the situation not specifically based on what was the best oral health personnel structure for delivery of oral health care services.

In Hong Kong, the reverse occurred with large-scale training of dentists being introduced subsequent to development of auxiliary training, but once more without giving due consideration to the changing disease trends in the population. Again, the decision-making was driven by forces external to the population's oral health status and care needs, with repercussions in excess availability of personnel and difficulties in establishing clear service structures for the whole population.

In Papua New Guinea, the gender limitation was abandoned and, after a trial period which followed the NZ approach in detail, a special, career ladder, set of curricula was tailored, as were the duties, personnel needs and service structure to suit the needs of the country. Those studying to be dentists and auxiliaries were housed in the same school, and a successful start was made with an excellent esprit de corps in the school and the service. Astoundingly, when changes came in the teaching and administrative staff, the whole system reverted to what was doctrinaire, not neces-

sarily right, for a situation totally different to that existing in Papua New Guinea.

In Sri Lanka, the school dental nurse system installed between 1958 and 1963, used the curriculum, standing instructions, records system and equipment, which were then standard in NZ. By the 1980s, this was still the case, though the average 12-year-old had 2 DMF teeth in Sri Lanka compared with 10 DMF teeth in the population for which the system was developed. The auxiliaries were fully occupied placing very well-constructed fillings, though often in copper amalgam, in the deciduous teeth of primary school children, with simple, though functional, equipment, while full-trained, salaried dentists worked nearby in hospitals extracting permanent teeth; their electrical equipment was mainly non-functional. Clearly, objectives had gone a little awry.

In Sudan, the gender limitation was also abandoned, but therapists called assistants, were trained as in Sri Lanka, as if the caries prevalence was extremely high, instead of extremely low and, in this case, they usually could not practice what they had learned because their equipment and supplies were either not provided, or not maintained. The basic principle of planning posts and facilities to absorb the output of auxiliaries from the training institution had not been established.

One could, of course, accent the positive in these cases, for there were, and are, many positive points as well. However, even the best examples have their problems, existing and potential, and I think that the main thrust of this symposium should be to look at the problems and see how they may be remedied, or avoided in the future.

It should also be a preamble to consideration of the future that, whereas this paper dwells mainly on

the therapist and hygienist contrast, the post-war period also saw numerous experiments with dental assistants having various expanded functions to provide a limited sort of therapist under direct supervision in single or group practices, a type of therapist who could be employed like a hygienist in private practice, a prosthetic dental therapist and, similarly, denturists. Laboratories for technicians became more common than employment in individual practices. Furthermore, the whole strategy of primary health care led to a variety of proposals for a type of dental auxiliary role as a primary oral health worker, or as a health auxiliary at the primary health care level, who performs some oral health activities.

At last, we can come to the present and the future. Although disease trends have dealt more kindly with the hygienist than the therapist type of auxiliary, we should not lose sight of the fact that the same type of trend in periodontal diseases could largely remove the main care delivery item from the hygienist's functions in the very near future, namely scaling.

If tooth restoration and scaling are to be reduced to rare activities, what would be left in the "hands on" care setting is likely to be massively less volume and much greater complexity. Why not, therefore, abandon the idea of auxiliaries altogether, modify training of fewer dentists and live happily ever after? That approach would certainly answer the question of dental hygienists as health care providers.

However, if we are to live with, and maintain success, we have to ensure continuation of all the "hands off" items of health education and health promotion, as well as the specific preventive procedures for individuals and groups. We shall also have the simple procedures which emerge, inevitably, from even the most

complex and sophisticated care procedures, not forgetting the ever simpler residual of all the things we used to do in drilling, filling and scaling.

The fundamental question is whether or not dentists and specialists, or their 21st century equivalent, constitute the appropriate and sole personnel category to do all these things at the primary health care and various referral levels and in closer relation to other health services and personnel. If a nation's answer is "yes", then the auxiliary role is non-existent for that community beyond the surgery assistant category and laboratory support. If the answer is "no", then detailed decisions on scope of work, conditions, training, etc., must be made in respect of all oral health personnel categories for those communities, whether they are primary health or primary oral health workers, various types of dental auxiliaries, dentists, dental specialists, or oral physicians.

Thus, I have made my review of the past and my perception of future possibilities. "But, will he come down off the fence", I hear you asking, "and say what he believes?" Yes, I am ready to do that on my given subject "Dental Hygienists as Health Care Providers".

However, let me first remind you that what I am about to say provides a global, general view. It is not directed to any single country. Along with any person's opinion, it has a high level probability of being wrong, or of becoming wrong due to developments which are not obvious at this time. It respects the need for every sovereign state and, further, for subdivisions of those states to find solutions suitable to the needs of their populations and socio-economic structures.

Having made those disclaimers, I believe:

1. that the dental hygienist of the 21st century will have duties very different from those originally

conceived in the 1920s which still constitute the core of a hygienist's work today;

2. that the basis on which those different duties will be established relates to the changing patterns of services needed as presented in the 1984 WHO Intercountry Workshop entitled "Organizational Changes in Dental Education", namely the massive reduction in routine surgical interventions (fillings and scaling) and the polarization of other interventions towards the non-interventive, educative, health promotive procedures on one hand and the complex surgical/medical procedures on the other;
3. that part of those changes will also relate to a broadening of the role of oral health personnel in general, as reduction in the traditional routine procedures make available the huge potential of our profession for wider functions in areas such as nutrition, injury prevention, promotion of healthy lifestyles, infection control and broader head and neck diagnosis and care;
4. that the objective of hygienist services will be to achieve the maximum possible in prevention and preventive behaviour, and to undertake clinical functions which are deemed to be appropriate to the preventive focus in its broadest sense. Part of the main objective will be to ensure that preventive behaviour and methods which have achieved better oral health are not discarded as populations forget how bad the average oral health status was in pre-prevention times. Other functions are bound to include procedures which do not exist today and may not be part of the periodontal health focus which gave rise to the dental hygienist category.

I suppose that you can read into these four beliefs, the further umbrella belief that there will

remain an important role for dental hygienists as health care providers, subject, as I emphasized before, to the nation-specific decisions taken on the structure and organization of health care in general. Whether, in fulfilling that role, they will be called dental hygienists, oral hygienists, health hygienists, hygienists, or any other name which competent authorities find appropriate, I have no prediction. Neither shall I attempt to say in what structure they would practice — salaried, private, government, independent — as that will surely vary widely from nation to nation, and the possibility of success remains across that wide range of options used singly or multiply in any one country.

It is my belief and hope that, one day, all health personnel will be trained in health sciences schools, after which they will take post-graduate courses according to their special interest and career aspirations. However, that belief — or is it a dream — is also heavily dependent on national options and on reaching a consensus throughout the health professions and multiple categories of oral health personnel.

Certain it is that whichever way the decision goes, all health workers need to be adequately trained and regularly retrained for their tasks. Equally, their work should be co-ordinated and ongoing planning of the numbers and training strategies for each category is needed for the continually changing scene. I do believe, as I have said, that dental hygienists will have an important role in the century to come, though a process of metamorphosis will be needed. Very careful organization and planning will be essential to guide that metamorphosis to a satisfactory outcome which will continue your excellent work in promoting better oral health status for all the people on this planet. ■

WORKSHOPS

June 30, 1989

SUMMARIES — ISSUES WORKSHOPS

REGULATION AND ALTERNATE PRACTICE

Co-facilitators:

Joanne Clovis and Anne Bosy

Due to the broad scope of this workshop and the limited time, the group was directed to discuss several topics and identify areas of concern. The topics selected were representation, scope of practice, supervision and image.

Representation

With the exception of the State of Washington and the Provinces of Quebec and Ontario, dental hygienists are regulated by a Ministry of Health or a Dental Governing Board. Dental hygienists in Canada, United States, Britain and Norway have representation and voting rights on their governing body. Dental hygienists in Australia, Denmark, Sweden, Switzerland, Japan, Italy, The Netherlands and Portugal have no representation and no voting rights.

There was considerable discussion on self-regulation versus representation and voting privileges on Dental Governing Boards and the implications of each method of regulation. This resulted in a recommendation that IDHF should provide information on existing regulatory status in each member country and further, to provide guidelines for the transition from nonrepresentation to self-regulation. These guidelines should be in a nondirective format for the purpose of sharing advantages and disadvantages of various regulatory states and would incorporate the ideal of the team approach to dental health care of the public. Examples of successful transitions would be very useful and should be included.

Scope of Practice

The dental hygiene scope of practice from twelve member countries was presented and differences were noted. Since the scope of practice varies somewhat in each country, discussion was based on whether there should be a basic scope of practice.

It was recognized that it is necessary for dental hygienists to adapt their services to the needs of the country and that there would be some differences between countries. However, the IDHF should develop a model of Dental Hygiene Scope of Practice that would include the following concepts:

- (a) Patient Assessment or information gathering
- (b) Planning for dental hygiene care
- (c) Implementing dental hygiene care in its broadest scope
- (d) Evaluating dental hygiene care in order to provide followup treatment.

This model should reflect a holistic approach to preventive dental care and should not be self-limiting.

The regulation for dental hygiene practice in Japan should be translated and reviewed, particularly for the "concepts of health outcome" statements that replace the lists of dental hygiene duties, and for the use of terminology which may provide alternatives to such currently misunderstood terms as supervision.

Supervision

The concept of supervision needs to be reviewed and a more appropriate term promoted, for example, guidelines, direction, authorization. It was determined that supervision is not directly related to self-regulation. Dental hygienists may be self-

regulated and be required to practice dental hygiene under direct supervision. The level of supervision, the type of representation and scope of practice all have an impact on how dental hygienists view themselves and the image they present to other professions and the public.

This workshop produced a lively exchange of ideas and demonstrated a need for information sharing. The final recommendation was to have more information sharing through workshops and seminars in order to have a better understanding of the issues of regulation, scope of practice and supervision.

WORLD-WIDE DENTAL HYGIENE EDUCATION

Co-facilitators:

Kate MacDonald
Director Continuing Education
University of Dalhousie
Halifax, Nova Scotia
Canada

Carole K. Ono
Chairman, Dental Health Programs
Seneca College
Toronto, Ontario
Canada

The format of this workshop includes brief presentations on dental hygiene education in seven countries followed by a discussion period to identify and develop strategies for education related issues of concern.

The countries and presenters will be presented in alphabetical order by country:

Australia

Jean McNicol
Dental Hygiene School
Gilles Plains Community College
Adelaide, South Australia
Former Instructor in Dental Hygiene

Canada

Kate MacDonald
Director Continuing Education
Faculty of Dentistry
Dalhousie University
Halifax, Nova Scotia
Canada
Former Director of Dental Hygiene

Japan

Fusako Ejima
Chief Instructor
School of Dental Hygienists
Faculty of Dentistry
Tokyo Medical and Dental University
Tokyo, Japan

Norway

Inger-Lise Bryhni
Chief Dental Hygienist in
Akershus County/Baerum District
Former Instructor/Teacher at the
Dental Hygiene School in Oslo

Switzerland

Lotti Vialle — Maibach
Dental Hygiene Instructor
Dental Hygiene School
Zurich, Switzerland

United Kingdom

Eveline Ann Gray
Senior Dental Hygienist, Tutor
School of Dental Hygiene
Glasgow Dental Hospital
Glasgow, Scotland

United States of America

Mary Alice Gaston
President American Dental Hygienists' Association and Associate
Professor and Education Director
Dept of Dental Hygiene
University of Tennessee
Memphis, Tennessee
United States

Issues of Concern

The following issues were identified and prioritized.

1. Setting for Dental Hygiene Education
2. Post-Graduate Educational Programs for Dental Hygienists
3. Additional Curriculum Components (e.g. local anaesthesia)

4. Lengthening of Dental Hygiene Programs
5. Standardization of Dental Hygiene Educational Programs (International)

STRATEGY/ RECOMMENDATIONS

1. That IDHF establish an educational committee with representation from member countries to:
 - a) Identify issues of common concern in education
 - b) Develop strategies to resolve common issues of concern in dental hygiene education.
2. That ADHA be requested to develop a data base of program information and curriculum of dental hygiene programs throughout the world.
3. That a dental hygiene educators forum be included in the program for the next IDHF symposium.

DENTAL HYGIENE QUALITY ASSURANCE: STANDARDS OF CLINICAL PRACTICE

Ellen G. Brownstone, RDH, MEd
Kathleen J. Newell, RDH, PhD

INTRODUCTION

Forrest and Gurenlian in an article in RDH, entitled "Recognizing Professional Responsibility" discussed some of the major issues facing the dental hygiene profession. They suggested that these issues focus on achieving recognition as a true health profession as well as on ensuring that dental hygienists are, in fact, capable of being responsible for the quality of care they provide. Such issues have resulted in the dental hygiene profession in both the United States and Canada developing standards of dental hygiene practice.

OBSERVATIONS

The following objectives were addressed:

- the concepts and application of a quality assurance model
- the use of practice standards in developing quality assurance programs for dental hygiene
- the responsibility of dental hygiene practitioners for quality assurance
- the role of practice standards in the professionalization of dental hygiene
- the dental hygiene profession's role and responsibility in quality assurance.

WORKSHOPS

The following topics were discussed as they relate to the overall concept of quality assurance.

- Dental hygiene role in quality assurance
- Review of terms
- Quality of care
- Quality assurance
- Structure of care
- Process of care
- Outcome of care
- Competence assurance
- Initial and continued competence
- Standards of practice
- Background on the development of the Canadian Standards of Practice
- Demonstration of the use of practice standards for self-assessment
- Small group exercise using examples of practice standards.

RECOMMENDATIONS

The following recommendations were a result of the workshop:

- Further development of Standards of Practice throughout the world
- Development of quality assurance model and practice standard workshops on a nation-wide basis
- Use of practice standards by individual and small groups of dental hygienists as a means of self-assessment.

IDHF: FUTURE PLANNING WORKSHOP SUMMARY

Co-facilitators:

Connie J. Tussing, RDH, MBA
Patricia M. Johnson, RDH, BSc, MSc

The success of an organization can be measured by its ability to achieve established goals and objectives. Without such goals, success is elusive and undefined. The International Dental Hygienists' Federation (IDHF) realized the importance of planning and began the process in late 1988. The conclusion to this first phase of planning was the workshop held during the International Symposium in Ottawa. The workshop was facilitated by Connie J. Tussing from the United States, and Pat Johnson from Canada.

The purpose of the workshop was twofold. First, it was an opportunity to actually establish the goals and objectives of the IDHF for the upcoming three years. Second, it allowed IDHF Directors and interested Symposium registrants the ability to explore the six steps of planning which can be used in any personal or professional situation.

The six steps of planning are:

1. Appraisal
2. Goal Setting
3. Objective Setting
4. Action Plan Development
5. Implementation
6. Evaluation

The appraisal step was completed through the use of a mail survey which was sent to all IDHF Directors and Officers in late 1988. They were asked to identify the strengths and weaknesses of IDHF and to prioritize goals in their order of importance. The results were compiled and distributed to the Directors and Officers prior to the workshop. During the workshop the results were reviewed for the sake of the Symposium participants.

Following the appraisal, goals were established. These goals were established by the IDHF Board of Directors at their Board meeting prior to the workshop and were based on the results of the planning survey. Although the IDHF Board identified many issues to be addressed in the future, it was determined that fewer, specific goals at this time would be most realistic. Particularly, survey participants had focused on the financial, organizational and communication weaknesses of the new IDHF that must be addressed before other goals can be accomplished.

The 1989-1992 Goals for IDHF are:

1. To strengthen IDHF internal communication, finances and organization.
2. To develop and improve the professional image of the dental hygienist.

The workshop participants discussed the goals. Following the discussion, small groups were formed to develop specific objectives and action plans for the goals. Three groups were formed for Goal #1, addressing internal communication, finance and organization respectively. Small discussion groups were also formed for Goal #2 after they met together initially to discuss the focus of the goal.

The results of the small group discussions were:

Goal #1

- a. Organization: Develop a process of networking between the member countries on specific issues.
 - Investigate the tax structures of various countries to determine the best location to permanently establish IDHF financial business
- b. Finance: Increase attendance at the 1992 Symposium in The Netherlands.

- Review organizational membership fees every three years.
- Increase the number of IDHF member countries by three by 1992
- Increase Symposium profits.
- c. Communication: Publish a quality newsletter on a quarterly basis.
 - Appoint an editor for this newsletter.

Goal #2

- Establish the existing professional and public image of the dental hygienist through an information gathering process.
- Develop a dental hygiene research data-base.
- Determine the competencies of dental hygienists worldwide and report at the 1992 Symposium.
- Investigate the feasibility of an International Dental Hygiene Week.

The results of the planning workshop were transmitted to the IDHF Executive Council. The preceding list is a synopsis of the group discussion. All groups had additional ideas that were also transmitted to the IDHF Executive Committee for their consideration. An idea which was discussed during both the Board meeting and planning session — that of individual IDHF membership — was implemented prior to Symposium adjournment.

The next step in the process is Implementation. Due to the time constraints of the afternoon planning workshop, it was impossible to develop complete action plans for all Goals and Objectives. Also, the plans that were presented required review by the IDHF Executive Council to determine feasibility and cost factors. It is anticipated that IDHF Committees will be established that coincide with the Goals and Objectives, and that they will be responsible for the implementation of Action plans in conjunction with the Executive Council.

The plans developed during this session were for the three years from 1989 to 1992. The final step in planning is Evaluation. A planning session will be held in 1992 to Evaluate the accomplishment of the 1989 plan, and then to again look to the future and establish plans for the following three years.

Planning is a never ending process. The workshop in Ottawa was just the beginning of what is hoped will be an ongoing IDHF process of establishing and achieving goals. Over fifty individuals participated in the workshop. The result was not only a plan, but a greater understanding between IDHF Directors

and workshop participants of IDHF and dental hygiene throughout the world.

*Submitted by
Connie J. Tussing, RDH MBA*

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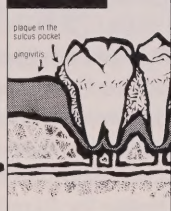
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Toronto, Canada

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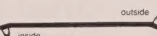
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If you don't believe the would you believe

I earn my living writing advertising. And as I happily prepared to write this ad with a litany of cute expressions, catch phrases and the odd pun or two, you can imagine my horror when I was handed an oppressive stack of research results regarding the benefits of oral irrigation using a Water Pik Dental System.

Frankly, it's not something everyone wants to read about, let alone write about. Gingivitis. Pockets. Subgingival access. But if anyone understands the importance of these things, you do. And far better than I.

So, I had no alternative but to use this research. Now, I've done my best to make this material readable but I'm not making any promises. Yet as much as I hate to admit it, these findings seem to be far more compelling than any ad I could write.

The purpose of this comprehensive study was to demonstrate the benefit of Water Pik Oral Irrigation on gingival health by measuring effects on clinical parameters and marginal and subgingival microflora.

Treatment groups, adjunctive to normal oral hygiene were compared over six (6) months:

- Group I daily irrigation with 300 mL water, then 200 mL 0.06% Chlorhexidine
- Group II daily irrigation with 500 mL of water
- Group III twice-daily rinse with 0.12% CHX (positive control)
- Group IV toothbrush (negative control)

Patients were randomly assigned and balanced by age and gender.

Enhancement of Gingival Health by Oral Irrigation with Chlorhexidine.

3-MONTH RESULTS

M.G. Newman, T. Flemmig, F. Doherty, et al. (UCLA School of Dentistry)

Study Summary: A double-blind study of 187 patients assessed the improvement of gingival health and reduction in disease-associated bacteria by oral irrigation. (Water Pik).

At 3 months compared to negative control, the group I) irrigating with 0.06% CHX had statistically significant ($P \leq 0.01$) reductions in GI (46.3%), GI Bleeding (53.7%), BOP (39.8%), plaque (50.9%) and pocket depth (5.5%). Water irrigation alone significantly reduced GI (30.0%), GI Bleeding (44.9%) and BOP (24.6%) but did not significantly reduce plaque (2.4%) or pocket depth (0.5%). Compared to positive rinse control, irrigation with 0.06% CHX was significantly better for GI (60.0%), GI Bleeding (88%), BOP (221%) and pocket depth, and also better for plaque and GI than water alone. CHX rinse was effective relative to negative control. Groups using CH had significant reduction in "Actinomyces"; CHX irrigation group had significant reductions in Gram negative facultative rods. Presented 1988 IADR Continental European Division. Louven, Belgium.

Results:

I. Despite minimal effect on supragingival plaque, water irrigation benefits are significant (compared to normal oral hygiene):

• Reduction in gingival inflammation (-30.0%)

• Reduction in gingival bleeding (-44.9%)

• Reduction in Bleeding on Probing (-24.6%)

2. Irrigation delivery enhances the chemical effect of chlorhexidine over rinsing with it:

- Irrigating once per day with water then 0.06% chlorhexidine markedly enhanced improvement in gingival health.
- Irrigation with dilute chlorhexidine significantly reduced Actinomyces bacteria associated with gingivitis.

Chlorhexidine and Irrigation in Gingivitis: 6 months Correlative Clinical and Microbiological Findings.

6-MONTH RESULTS

T.F. Flemmig, M.G. Newman, S. Nachnani, et al. (UCLA, Los Angeles)

Study Summary: The objective was to evaluate the effect of irrigation with water or chlorhexidine (CHX) on gingival health and plaque microflora of 175 patients with naturally-occurring gingivitis. In this positive-negative controlled, examiner-blind study, 165 marginal/subgingival plaque samples were taken from 88 of the patients completing the 6 month trial. Microbiological analyses were performed using selective and non-selective culture methods.

Results: At 6 months, daily

advertising for Water Pik[®], the research?

irrigation with water then 0.06% CHX (Group I) significantly reduced mean gingival inflammation by 42.5%. Bleeding on Probing by 35.4% and the total Colony-Forming Units of Gram negative anaerobic rods ($P \leq 0.02$) compared to toothbrush control. With 0.12% CHX rinse, mean gingival inflammation was reduced 24.1% and BOP by 15.0%. For both CHX irrigation and rinse groups, the Calculus Index was significantly increased while plaque was significantly reduced.

Daily water irrigation significantly reduced mean gingival inflammation by 23.1% and BOP by 24.0% at 6 months. There was no increase in supragingival plaque compared to Group IV.

In the small percentage of sites initially $>4\text{mm}$, GI was significantly reduced only by water irrigation (55.2%) and BOP only by CHX irrigation (38.2%) when compared to toothbrush control.

In the following tables, for sites with initial pocket probing depth $\leq 4\text{mm}$, GI and BOP were significantly reduced by all treatment groups; Group I irrigation was most effective in reducing BOP, ($P \leq 0.05$)

6 MONTH REDUCTION BLEEDING ON PROBING		
Adjunctive to toothbrushing		
Group I	CHX Irrigation	36.6%
Group II	Water Irrigation	26.0%
Group III	CHX Rinse	15.9%
Group IV	Toothbrush Control Comparison	

*Presented 3/18/89 AADR
San Francisco.*

Effects of 6 Month 0.06% Chlorhexidine Gluconate Irrigation on Plaque Microflora

6-MONTH RESULTS

*S. Nachnani, M. Newman, T. Flemmig,
et al. (UCLA School of Dentistry,
Los Angeles)*

Study Summary: This study documents the bacteriologic effects on marginal and subgingival plaque in gingivitis patients who participated in a 6-month, positive/negative controlled, examiner-blind study. Curette plaque samples from sites in each of the four test groups were characterized using selective and non-selective culturing methods.

Results: At baseline, all patients harboured plaque microflora typical of naturally-occurring gingivitis. Only at 3 months were *Actinomyces* significantly reduced by CHX irrigation and rinse; at 6 months no significant differences were apparent, but the numbers of Colony-Forming Units were reduced for both CHX rinse and irrigations groups.

All treatment groups reduced CFU and proportions of black pigmented *Bacteroides* at 6 months.

Furthermore, CFU and percent of Gram negative anaerobic rods were significantly reduced at 6 months by irrigation with CHX.

At 6 months, the CFU of streptococci were similar for all four Groups.

*Presented 3/19/89 AADR
San Francisco.*

Naturally, we think you should recommend the Water Pik Dental System to your patients. After all, the research shows the Water Pik Dental System to be effective in the enhancement of gingival health. Now we just have to see about the advertising.

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6 MONTH REDUCTION GINGIVAL INDEX		
Adjunctive to toothbrushing		
Group I	CHX Irrigation	48.0%
Group II	Water Irrigation	38.0%
Group III	CHX Rinse	28.7%
Group IV	Toothbrush Control Comparison	

PANEL DISCUSSION

June 29, 1989

MAJOR ISSUES AND TRENDS: WHAT WILL BE THE FUTURE OF DENTAL HYGIENE?

Panelists: Dr. Jane Fulton
Catherine Fooks
Dr. Donald Lewis
Dr. David E. Barmes

Moderator: Patricia Johnson

QUESTION & ANSWER PERIOD FROM PANEL DISCUSSION

Thank you very much. I think that has been four very useful presentations for our purposes this week and we are very grateful to all of you. I'm sure our panelists will entertain questions.

Q: I hope it was Dr. Fulton that mentioned this. The concept of a common year of general health education, prior to commencing specific formal medical and dental education would no doubt contribute much to Dr. Barmes' concept of us all working together towards optimal general health and I was wondering what has been done to promote this model of education?

Answer (Dr. Fulton) The answer is, to date — nothing. And here is what I think needs to happen. First of all this proposal has been drafted by a couple of members of the Canadian Medical Association who are considered to be way out in left field. A number of other health educators have gotten involved and here is Dr. Barmes' statement that you can't do it by yourself. There are too many political barriers, to having one health professional group try to change the way we play this complex game. And so what's happened is a number of other key stakeholders have become involved. Some senior nursing leadership in Canada have become involved. People like me who are valuable mainly because

they can talk fast, have become involved. And so we are beginning to try to create documentation that has more than one stakeholder group. I think what would happen is between now and maybe the year 2000, some of the really powerful professional groups would be forced to back off. For example, a number of Ministers of Health are trying to prevent medical schools from growing. We have barriers now to admission of foreign graduates into Canada. We are now suffering in many provinces a critical nursing shortage, which the Minister of Health in my province — Ontario — believes is purely a form of equilibrium. There are enormous shortages in many areas of Canada, of your own professional groups, there aren't enough hygienists, there are in some areas too many dentists. So we have a problem in which there isn't any transference of basic skills between one group and another and Dr. Barmes brought that up really well when he said, here is a group of dental health professionals who have, in fact, eliminated their job market by doing such a good job with dental health of children. And this group has the potential then to become a health educator in another field. But they've crossed the territorial boundary into nursing, and their hands are slapped. And what we have proposed, is that the health profession, sort of college, have some basic sort of trunk where everybody begins the same. And as you get out into the branches you can then become more specialized. But we have, through that trunk, an opportunity to communicate with each other. And when you have a

similar background, it's like playing on a football team, that's how the old boy's network gets built. Well what we are hoping is that we can create better communication between health professionals, between dental hygienists and physicians, and nurses and dietitians and all of these people by starting out with the same foundation. Because health is not just something that comes from a hospital, health comes from a community clinic, and a daycare and a church basement, and all these other things. And if we have that sort of fundamental beginning, I think by the year 2000 we can begin to reshape the way we think about health. So like, we've gotten absolutely nowhere. It is really discouraging. But thanks for the great question.

Q: Dr. Fulton, just as a follow-up question, I wonder if any networking has been done across or between provinces on this. Because I think it is just as important in Canada that we don't confine our efforts to within province co-operation and working on these types of things. I would think there would be some support if there could be a reflection of opinions that supported this model from other provinces.

Answer (Dr. Fulton) What's happening is that the number one key player in this field for our nation is the World Health Organization. Provinces tend not to talk to each other very much because in our country health is a provincial jurisdiction and people become very jealous about their own bailiwick and their own park. What is beginning to happen is that we are starting to have what are called

Ministerial Briefings. And I have been very lucky in being asked to go to Regina in two weeks and talk to the ten provincial delegations about health and the family. Where will we go in the next decade with this important issue and how can we begin to talk to each other. I think what happens at meetings like this you begin to meet people from other places and psychologically it's very difficult to send a message on a fax machine that has something as emotional or political on it as a health issue. You have to send a message through a person. For example, some of the most powerful links have been forged by the World Health Organization who put together people from fifty nations at a time and last year the WHO locked up representatives of fifty nations in Adelaide, Australia for ten days and they said we will let you out when you have a healthy public policy for your country and on major issues. For example, I worked in a group on women's health for the world. And how do we begin to make that happen and how do we talk to each other? I have had more mail and had more intellectual stimulation from Australia and from France and from Denmark, than I have from Quebec and Manitoba. But it is because you have made that connection with a person at a meeting like this. And that is why Dr. Barmes said it is so important for you to begin trying to take an opportunity to communicate and to get health on the agenda, not just oral health, and not just physical health, but the health and well-being of the community. Most of you in this room are probably mothers, I mean judging by your age and my age, I have five teenage daughters, which is some days a bit of a challenge. But as parents we have a feeling about what makes our children healthy. I mean even if we are just aunts or people next door to children, children are healthiest when they are happy. And they are

happy when things are going okay at school, and their bicycle works and the bicycle path is safe to get to school and there isn't a lot of smog in the air and they are not worrying about nuclear war. We are in a position of having to think, rethink seriously the impact of technology on health. And that is why we need more people like you, who are involved in making health happen than we are in having people who make disease go away. And so you have a really key role not just now but in shaping the generation ahead. So the answer to your question is, no we're doing a lousy job, but by taking advantage of days like today, you can begin to make it happen. Even if it is just a little step, because after the first little step you know it is like changing directions with a herd of chickens, or whatever you call a bunch of things. They will follow along behind.

Q: I would like to make the question to Dr. Fulton too. I was very pleased with your definition of health. But in a way it also creates a problem about what is health and what do you really mean with it. There are a lot of authors who have different definitions. And I was thinking about the way you answered the previous question. Do you think it would be a good idea, trying to have more of the humanistic in our education program, and do you think it would be a good idea to try to have combined programs for nurses and dental hygienists?

Answer (Dr. Fulton) I think it would be useful for us to have a solid foundation of similar types of education and the humanities may be one way in which we approach this. At a professional level, very few countries can afford to develop a humanities education for health professionals. Many nations wish to have us trained in technical skills, and they are willing to provide support for universities for technical learning but not for humanities

learning. Humanities we may have to push back into the years in which children are younger. That we begin to have a similarity of humanities training. When we have skills similar to other people, we cannot only speak between nurses and physicians and dentistry, but between Sweden and France and the United States and China. And the professional links are ways in which nations get closer together and not farther apart. So I have a great fundamental belief in defining things in similar ways, which is why the World Health Organization definition of health is so helpful, not just an absence of illness, but a sense of well-being. A quadriplegic person living in a wheelchair, who is looking forward to tomorrow, whose children are happy, has a sense of well-being, that is a healthy person. A strong, beautiful woman who kills herself with an overdose of drugs is not experiencing well-being, she's not a healthy person. So it doesn't matter if we are disabled, a sense of well-being is what makes us human in spirit, and able to move forward. So coming across professional groups helps us to come together better. And I think there are organizations like this International Federation that do that very well. And so this group needs to be cherished. Because it makes communication work between nations.

Response (Dr. Barmes) I wanted just to respond a little bit to that and also to respond a little bit to Dr. Fulton because I'm very happy to hear you say a moment ago that there was an effort to try and limit medical schools. I live for the day, when there wouldn't be any medical schools or dental schools or veterinary schools or pharmacy schools, but there would be Health Sciences schools. And this comes back to the question that was just asked, because there you would have all those people interested in health, doing their basic training together,

and at the end of their health sciences, their basic health sciences training, they would then decide to be a hygienist or a veterinarian or a psychiatrist or whatever you like, and I do believe that that is the way sooner or later we will have to go. But we have to break down, as Dr. Fulton said, an awful lot of establishments before we get there.

Response (Dr. Lewis) Yes I want to say something. It is a challenge too. I think it is fine to say we should be one big happy dental family, and who among you would really say that is a bad idea. But what is the reality? What is the reality in respect to this particular group, Dental Hygiene. And I think the reality is a wee bit different than that love-in kind of approach. What I tried to point out is that in fact, the situation, if this hasn't happened to-date, and it has not, okay, it is going to be more difficult, even though it should happen, it's still going to be more difficult in the future as the disease or the clientele that needs to have health promotion as they kind of diminish. So I think it's, frankly, a little simplistic just to say lets all have a love-in and be happy because, there isn't any history, contradict me if I am wrong, that that will happen very easily. It is less likely to happen in year 2006 and 2030

Q: I'd like some suggestions on what I, as a hygienist, from each of the speakers, can start doing, today. We've got all the suggestions, but I would like some concrete advice, with their expertise, on what I should be doing now.

Answer (C. Fooks) I would suggest that you get in touch with the Ontario Dental Hygienists' Association, and push them to do some of the things that I was talking about earlier. An organization is only the compilation of its members, and you are an individual member, and I

would suggest you get involved with them, and ask them to think about some of the issues that I was talking about. Because certainly the issues that I was talking about were not individually based, they were as a profession, as a whole. Basically because, as I said to you at the start, I don't know very much about the practice of dental hygiene and therefore can't give you much advice on that. But as an individual, as a member of an organization, you can have a lot to do with what they do, politically and publicly.

Response (Dr. Lewis) . . . I think that you would want to, as a dental hygienist and concerned citizen; consider and investigate the areas mentioned and, through your political organization ie: national/provincial dental hygiene associations identify some of these issues. If you don't start now, to organize and wait till 2030, it's too late. You are having an issues workshops tomorrow, and this International group has a facilitating role because things are going to happen very differently in different countries, but they can provide materials, speakers, data, methods, to all other member organizations.

And Dr. Barmes, I think she's challenged you to give her some ideas.

Response (Dr. Barmes) WHO is one of those organizations, at least my part of it, where we don't do anything until we have a situation analysis. And so of course normally I would say well, tell me what your situation is and then I will try and respond. But as we haven't got time to do this, and as I don't know exactly where you come from and what you're actually doing, the only specific response that I could give to you as I would to any other person asking that question is, first of all sit down and look at yourself and find out what am I doing, and what do I

need to evaluate what I'm doing. How could I develop systems or take systems that are available and evaluate what I am doing to see if I am achieving anything for the health of the group that I am working with. And if you find something important then you make sure that you either respond individually to this or that you both respond individually to this and try and get your association to respond to it too. The only other point I would make, which is a rather similar one, is thinking of the things that have been discussed, not only at this symposium, but in this whole meeting, not just in this session, but in this whole symposium. I would look at the things I don't know and try and build up my knowledge in these areas. For example, if you don't know about oral manifestations of HIV infection and infection control to combat spread of the infection, then I would learn these things, but you may already know them of course, I am just saying this as a possible way of proceeding.

Comment (Dr. Barmes) I don't know the geography very well around here, and I don't know where McMaster University is, but one of the things that Catherine (Fooks) talked about was development of a public image and she has sent out a cry to us this afternoon, about not knowing about dental hygiene. So I would suggest that if you are anywhere near this lady that maybe you could help her learn more about our profession and start on an individual basis.

Response (Fooks) If I could just respond to that for a minute. I think that your comment is dead on and it is rather telling that somebody you know developing a career in the health policy field doesn't know anything about dental hygiene, now obviously part of that is my fault, because it is not in the area that I studied but part of it is something to do with the presence of the profes-

sion. How come I know about midwives and nurses, and nurse practitioners and God forbid even dentists, but I don't know very much about hygienists. So you are right, there is something about that, and I would imagine that people who don't spend their paid job thinking about policy issues, perhaps know even less. So there is certainly a job to do there.

Comment (Johnson) We have been challenged, each of our panelists in turn, have challenged us. Dr. Fulton said, "Are we ready to take a more pro-active stance"? Ms. Fooks says, "There are strategies that we can use", and she outlined, research, public education, improving the professional profile. Dr. Lewis challenges us to take the opportunity from what he says could be a

potential crisis. And Dr. Barmes says, "In the light of all of this, let's be cohesive, and make sure that we can develop a political message based around avoiding disease. The difficulty of promoting avoiding disease as opposed to curing the problem, which we seem to have been more successful at." ■

Please Note: A complete presentation is available on audiotape — See page 51.

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ABSTRACTS

For complete paper as presented, please write address following abstract.

EVALUATING TOOTH MOBILITY. C.M. Krupa* and C.D. Smith. The University of Maryland, Baltimore College of Dental Surgery, Baltimore, Maryland.

A complete periodontal examination of a patient's dentition includes the evaluation of tooth mobility. The determination of clinical mobility must be precise and the technique reproducible in order to aid in accurate data collection and assessment, and to facilitate treatment planning. The purpose of this instructional video tape was to explain and demonstrate the proper technique for evaluation of tooth mobility. The program was developed for freshman dental and dental hygiene students.

The technique employed the handle ends of two single-ended instruments applied to opposite tooth surfaces. Both scenarios of teeth in contact and an isolated tooth were depicted. The grading criteria taught was a scale of 0 to 3; 0 representing no discernable movement and 3 representing depressibility of a tooth.

Upon completion of viewing the video tape, students were able to meet the following, instructional objectives:

1. Identification of the instruments to be used.
2. Demonstration of necessary amount of force required.
3. Identification of the direction in which force is applied.
4. Identification of points of reference which aid in detection of mobility.
5. Demonstration of the evaluation of mobility on an isolated tooth.
6. Citation of the criteria for grading mobility.

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DENTAL AIDS FROM AROUND THE WORLD. MWO R. Jobin.*

The articles of this impressive and unique collection have been gathered over the past 6 years from 15 countries around the world.

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*Presenter

THE ROLE OF THE EXPANDED FUNCTIONS DENTAL HYGIENIST IN THE CANADIAN FORCES. MWO F. Lemieux.*

In the early sixties, the need for restorative dentistry in the Canadian Forces was exceeding by far its dental human resources. To resolve this problem, the Canadian Forces Dental Services introduced an expanded functions training program for its hygienists. It was the first of its kind in Canada. This initiative significantly helped upgrading the dental health of our soldiers. Today 92% of the Canadian Forces are free of decay.

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DEVELOPMENT OF CLINICAL PRACTICE STANDARDS FOR DENTAL HYGIENISTS IN CANADA. D. Lachapelle, S.J. Feller, K. Scherer, L. Chambers, S.B. Amer*, M. Forgay. (Ecole de médecine dentaire, Université Laval, Québec, Canada).

Studies have demonstrated that standards of practice are developed for health professionals to serve as a foundation for quality assurance and professional development endeavours. The purpose of this study was to develop clinical practice criteria and standards for Canadian dental hygienists. A similar methodology was used by the Manitoba Association of Registered Nurses. The framework combined Donabedian's structure (employment situation) process (procedures performed) and outcome (oral health achieved, dimensions of quality care) with a developed model of dental hygiene practice. During a two-day workshop, a group of 12 representative practising dental hygienists generated and drafted 108 criteria and standards in a form that would be used in the subsequent national survey. The survey methodology was "The Delphi Technique", an established method that is designed to achieve consensus. A random sample of 720 Canadian dental hygienists was selected for the content validation survey. The response rate was 72% and 458 respondents constituted the final sample. For each of the 108 statements, respondents indicated their degree of agreement or disagreement as to whether or not the statement described a requirement for the provision of dental hygiene care. Items achieving an 80% level

of consensus were deemed to be appropriate. Of the 108 items, six were deleted, several modified and one split into two items so that 103 clinical practice criteria and standards resulted. For example, the item: "The dental hygienist develops a plan for a patient's dental health education" was developed as a process criterion to which this standard of practice was added: "by identifying desired goals for dental health education". Practitioner involvement in the process of endorsement of the final criteria and standards made the standards representative of the practice settings and the clinical procedures of Canadian dental hygienists.

This study was sponsored by Health and Welfare Canada.

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SURVEY OF FLUORIDE SUPPLEMENT USERS 1988. S. Cobban and D. Kokaram*. Sturgeon Health Unit, St. Albert, Alberta, Canada.

A telephone survey was conducted on a random sample of users of the Sturgeon Health Unit computerized fluoride supplement tracking and dispensing system. The intent was to obtain information on compliance, storage practices, and satisfaction with the program.

From a random start point, every seventh child's name on the active list of the fluoride supplement information system (FSIS) was selected. Questionnaires were completed by telephone interviews. Two hundred and sixty-four (264) families were interviewed, for a total of five hundred and ninety-three (593) children, out of an active list of two thousand three hundred thirty-five (2335).

Compliance ranged from 27.3 percent complying daily to 21.6 percent complying less than once per week. Fluoride supplements were most commonly stored in the cupboard (70.8 percent). Ninety-two (92) percent of those interviewed found the program desirable, but many suggestions for improvements were received under "comments". Seventy-two decimal seven (72.7) percent of respondents complied less than daily. As the refills are updated automatically and assume daily compliance with the prescribed regimen, many families had excess quantities of fluoride stored in their homes. Many respondents commented that refills were received "too often" and

thirty-nine (39) percent indicated that they would prefer to contact the health unit when they were ready for a refill. Our findings indicate that revision of our existing system is warranted to try to ensure that the amount of fluoride dispensed is consistent with the amount consumed.

This study was supported by the Sturgeon Health Unit (403) 459-6671.

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DENTIFRICE USAGE AND FLUORIDE INGESTION IN PRESCHOOL CHILDREN. D. Lachapelle*, P.L. Simard, L. Trahan and J.M. Brodeur (Ecole de médecine dentaire, Uni. Laval, Qué., Canada).

Previous studies revealed that young children can ingest significant amounts of fluoride during toothbrushing with fluoride dentifrice. This pilot study aimed at working out a method of determining the amount of fluoride ingested from dentifrice through the measuring of the fluoride content of all liquids expectorated during toothbrushing. Twenty three boys and girls aged from 2 to 5, living in non-fluoridated areas, brushed their teeth once with fluoride dentifrice, one at a time, under supervision at the kindergarten. The children's habits of brushing were previously obtained from a questionnaire addressed to parents and allowed to reproduce a regular home brushing. For each subject, a tube of dentifrice in gel (.24% NaF) was weighed before and after the use, revealing the weight of gel used. During the brushing all saliva, liquids and gel expectorated were collected in a one liter plastic beaker to which the used toothbrush was added. These liquids were diluted to 50 ml. Their fluoride content was measured with an Orion fluoride specific electrode. Positive and negative controls were run. The ingested fluoride was then calculated. A Pearson correlation coefficient ($r = -0.472$, $P = 0.02$) showed that the younger the children were, the greater was the amount of gel ingested proportionately to the amount of gel used. Expressed in percentage, this proportion was 58, 9, 48, 1, 34, 0 for the 2-3, 4 and 5 year-old respectively. One third of the subjects had a daily fluoride ingestion from dentifrice greater than the recommendation for supplements. The daily excess varied from 0.17 to 0.76 mg. The ingestion of dentifrice was significantly ($P = 0.046$) higher for the subjects who did not rinse after brushing compared to those who rinsed. These results justify the need of an extended research on fluoride consumption

from dentifrice with this methodology, taking into account each subject's variation of ingestion from several toothbrushings.

Supported by a grant from: Le Fonds Emile-Beaulieu.

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DENTAL FLUOROSIS LEVELS IN THE MAXILLARY AND MANDIBULAR TEETH OF THE PERMANENT DENTITION. J.F.L. Pimlott*, J.A. Hargreaves, G.W. Thompson, and L.D. Nobert. Faculty of Dentistry, University of Alberta, Edmonton, Alberta and Sturgeon Health Unit, Alberta, Canada.

A study was undertaken in two rural areas of Alberta to examine the effect of fluoride supplementation on enamel fluorosis in the permanent teeth of children 11-13 years old. The sample size of the study group and control groups were 119 and 70 respectively. The fluoride water concentration of the study groups and control was less than 0.3 ppmF. The fluoride supplementation regimen for the study group was 0.5 mgsF per day between birth and 3 years and 1.0 mgsF per day from 3-12 years of age, the control group received no fluoride supplementation. Fluorosis was measured according to the TSIF index. Fifty three percent (53%) of the study group had enamel fluorosis as compared to 10% of the control group. Of those individuals with fluorosis the majority 71% (for both the control and study groups) was class 1 fluorosis (white flecking or snow capping). Four indicator teeth were examined in respect of fluorosis; tooth numbers 2-1, 2-6, 4-1 and 4-6. The fluorosis in the maxillary teeth was found more often than in the mandibular teeth and the maxillary incisors had more fluorosis and more severe fluorosis than the other teeth. This finding shows that from an esthetic point of view, unfortunately, the maxillary teeth seem to be more vulnerable to fluorosis.

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EVALUATION OF THE MOTIVATIONS WITH ARTIFICIAL INTERIGENCE (AI) PROGRAM. J. Mizobe, M. Umehara, M. Kohno, H. Doi. Hyogo College of Med. Dept. of Oral Surgery and Dentistry, JAPAN.

"Motivation" is the essential work for the dental hygienist (D.H.) at the Tooth

Brushing Instruction (TBI) to the patients suffering from the periodontal diseases. This term "Motivation" is now understood as the activities by D.H. which affect on the mind of the patients to start to do something, tooth brushing and etc. In other words, the subjects are focused on the efforts of D.H. and most of the interests are in the instruments and the demonstration materials such as to see the bacterial colonies by microscope. We would like to propose that real meaning of the 'Motivation' is to observe the movements in the mind of the patients who determine or want to need it by themselves. Their objects may be very small things but it is worthiest to make decision and find them by the patients.

In this report, we present the evaluation methods to watch the patients by using AI programs. AI has an unique character to learn evidences by the users (D.H.). These systems are edited by computer language, Prolog, and the programs are consisted of native language. By using these systems, we don't have to adapt our evaluations to the fixed classifications and are able to express them by our own words in the programs as the data-base. Then the evaluations are analyzed by the re-evaluation programs diving the words (evaluations) into elements. AI programs show us that we observe the patients emotionally in some parts and estimate them by the evidences (plaque score and so on) in other parts. These findings of AI programs are correlated to each elements automatically and presents the pattern to watch the patients.

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THE ROLE OF THE DENTAL HYGIENIST IN TREATING LEUKEMIA PATIENTS. J. Mizobe, M. Umehara, M. Kohno, H. Doi. Hyogo College of Med. Dept. of Oral Surgery and Dentistry, JAPAN.

Oral Hygiene is one of the important factors in the systemic treatments for leukemia. Many complications are noticed in the oral conditions of leukemia patients. In some cases, chemotherapies are limited to undesirable dose by these conditions. The oral conditions of them are affected not only by the disease as one of the symptoms, but also by the therapies as the side effects of drugs. The significance should be addressed before and during the course of the treatments. So we, dental hygienists, can plan an important role for the leukemia in

every treatment step to maintain their oral conditions by co-operating with the dentist and doctor of internal medicine. In this report, we present two cases with gingival swelling as the model of oral hygiene control. One is a typical syndrome which occurs in many patients, the other is an atypical case. Case1: Erythroleukemia (FAB M6)

Case 2: Myelomonocytic leukemia (FAB M4)

In the case 1, the gingival swelling was symptomatic and the necrotic lesions were recovered by daily oral cares by dental hygienist. In the case 2, the gingival swellings were induced by the tumour invasion to the oral mucosa. The point of the treatments for this patient was to distinguish the inflammatory lesions from the tumor lesions. Daily care was succeeded in the control of the inflammatory parts and the tumor parts appeared to be clear.

Our treatments were not for the tumor directory but the oral conditions would have been kept from severe infections during chemotherapy. Therefore it is the most important work to instruct the patients how to brush according to their oral conditions.

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A MOBILE DENTAL UNIT — AN ALTERNATIVE TO FIXED CLINICS. U.M.E. Chikte, A.A. Brand, H.A. Lewis* and M.J. Rudolph: Department of Community Dentistry, University of the Witwatersrand, Johannesburg.

Several studies indicate an increasing prevalence of oral diseases in underserved communities in South Africa. This paper describes the development of a mobile dental unit (MDU) to overcome barriers of accessibility, availability and affordability, which are usually associated with fixed clinics.

The design of this dental unit is based on a prototype which included a trailer with two dental surgeries. The new MDU has four fully-equipped surgeries capable of delivering a comprehensive preventive and curative service in any area. Overall advantages of the unit are towing stability, weather protection, self-contained electrical supply, and ease of deployment. From a 2 x 2.2 metre box trailer, an enclosed area of 7 x 7 metres is formed, which serves as waiting, educating and operating areas. Audio-visual aids are utilised in oral health education. The surgeries are operated by two oral hygienists and two dental therapists who can thus treat four patients simultaneously.

Thus far the MDU has visited a wide variety of rural and urban schools, handicapped institutions and clinics. Several thousand patients have been successfully screened and provided with health education, fissure sealants, prophylaxes, extractions and fillings.

The MDU facilitates teaching, overcomes barriers to oral care and appears to be a viable alternative to fixed clinics. An outreach programme of this nature fits with the concept of community service by taking care to where it is most needed.

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CLINICAL AND MICROBIAL IMPACT OF SIMULTANEOUS ULTRASONICS AND SUBGINGIVAL IRRIGATION IN PERIODONTITIS PATIENTS. C.M. Krupa*, G. Minah, W. Rose, M.A. Reynolds, and J.B. Suzuki. Univ. Maryland and the John Hopkins Medical Institute, Baltimore, Maryland.

Ultrasonic subgingival irrigation is designed to combine the removal of calculus and plaque on root surfaces and irrigation of periodontal pockets with antimicrobial agents. The purpose of this study was to explore the clinical and microbial impact of ultrasonic subgingival irrigation in periodontitis patients.

20 periodontally involved patients were randomly assigned to receive either zinc chloride or sterile distilled water (control) contained in a modified ultrasonic device. Plaque samples were taken from 3 pre-treatment sites (1 healthy site, 2 diseased sites). Clinical indices were taken (PI, GI, and pocket depths), and the patient's entire dentition was ultrasonically scaled. Post-treatment plaque samples were taken from the 3 sites. Clinical indices and plaque samples were taken at 7 and 30 days, by a clinician blind to the irrigant used.

Pre-treatment baseline measures of PI, GI, and pocket depth did not differ between the 2 groups. The results indicate a significant reduction in PI and GI in both groups by day 30. A trend in pocket reduction was noted: 25% zinc chloride group and 16% in the control group.

Among diseased sites (5mm probing depth) a significant reduction in total microbial count compared to pre-treatment samples, was observed in both the control (25-60%) and treatment groups. A modest but consistent trend towards a greater reduction (15-95%) in microbial counts was found in the zinc chloride group.

UTILIZATION OF THE DENTAL HEALTH CO-ORDINATOR IN LONG-TERM FACILITIES. K. McGrath. New England Sinai Hospital, Stoughton, Massachusetts.

The dental hygienist has the expanded capability to plan, co-ordinate and execute a comprehensive preventive dental health program within long-term facilities. She can adequately begin to meet the increasing dental needs of the handicapped and geriatric populations, while under the supervision of a dentist.

The primary responsibility of the in-house dental program is to reduce acute dental problems through a comprehensive preventive program. Increased access to care for compromised patients provides the opportunity for detection and treatment of long-standing dental neglect. In addition to clinical care, the hygienist is the catalyst for promoting interdepartmental communication through in-service programs. The dental health co-ordinator is able to use an expanded administrative function to assure that the dental program is an efficient element in total patient care. In addition to the daily management of the dental clinic, the co-ordinator is also the primary liaison with medical and administrative staff.

The utilization of the clinical and administrative skills of the dental hygienist can provide the leadership necessary to manage an in-hospital dental program for medically compromised patients.

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DENTAL SEALANT RETENTION AFTER ENAMEL PREPARATION WITH AIRPOLISHER AND TRADITIONAL CLEANING. L. Scott*, S. Brockmann, G. Houston, and D. Tira. University of Missouri-Kansas City, Kansas City, Missouri.

Airpolishing devices have been suggested as an alternative to traditional means of enamel surface cleansing prior to sealant application. This clinical study compares sealant retention using the two cleansing methods. Sixty subjects (ages 6-10) with four clinically caries-free, unfilled first molars were identified. An examiner blind, split mouth design was used. Treatment provided in a mobile van consisted of cleaning with: 1) an airpolishing device (Cavi-Jet™) using overlapping strokes for 20 seconds, or 2) a handpiece, prophylaxis angle, brush and pumice slurry for 30 seconds. Tinted, self-cure sealant (Delton)

was applied by staff blind to treatment. Forty-seven subjects were examined at 7 months and twenty-three at 14 months. Retention was rated using a five-point scale with a score of five indicating optimal coverage. Maxillary mesio-occlusal and mandibular occlusal sites were selected as study sites. Median scores computed for study sites for both groups were in the four-point range indicating clinical acceptability (Traditional groups: 4.00-4.88; airpolished groups: 4.40-4.85). Overall, the airpolishing groups retained sealants equally well as the traditional groups at 7 and 14 months.

This study was supported by Dentsply/Equipment Division, Cavitron Products, New York, N.Y.

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THE PAST HISTORY OF DENTAL HYGIENE — AUSTRALIA. J.D. McNicol*, Adelaide.

Legislation was passed to allow the practise of dental hygienists in the early seventies and a dental nurse was sent to the U.K. for training as a hygienist so that she might return to Australia and practise in the Adelaide Hospital.

In 1974 Dr. J. McIntyre developed a curriculum for the training of dental hygienists at the Dental Hospital. He was joined by Jean D. McNicol (lecturer-hygienist) in January 1975 to plan the running of a pilot course which began in May 1975 and ran for one year. Curriculum change did not occur until 1980 when the course length was extended to eighteen months and the school location was moved to the outer city suburbs.

The first Dental Hygiene Assn. was established in the late seventies.

At the beginning of the eighties a registration exam was introduced for all overseas trained hygienists who wished to be employed in Australia.

In 1988 a conversion was introduced for Dental Therapists who wished to practise as hygienists.

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FORTY YEARS OF DENTAL HYGIENE IN CANADA. K. Macdonald, 3914 Novalea Drive, Halifax, N.S. B3K 3G7 Canada.

The first dental hygienist began working in private practice in Saskatchewan in 1949

and in 1950 three hygienists were employed in public health in P.E.I. From these early beginnings there has been steady progress and change in all aspects of dental hygiene.

This table clinic will attempt to portray the history of dental hygiene in Canada highlighting significant events related to the early days in public health and private practice up to the present day.

The diversity in educational preparation in various programs will be portrayed.

The steady growth of the profession through professional organizations will be outlined.

Other areas which will be emphasized are legislative changes, the variety of work sites and duties as they have evolved over the years.

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DENTAL HYGIENE IN DENMARK. Lone Andersen.

Denmark has 5 million inhabitants and about 800 RDH.

They are working over all Denmark, 50% in private practice and 50% in Public Dental Service. Most RDH are working with clinical tasks.

There are 2 Dental Hygiene Schools in Denmark and it is a two-years program, which it has been from the start 1972.

To work as a RDH in Denmark a license from National Board of Health is required, which is received after graduation from Danish Dental Hygiene School.

Dental Hygienists are working under a general supervision of dentist and are formally competent to:

1. Examination of patients
2. Removal of hard and soft dental debris and polishing of the teeth.
3. Finishing and polishing of dental restorations, including removal of surplus filling material.
4. Application and removal of orthodontic appliances.

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HISTORY OF DENTAL HYGIENIST IN JAPAN. Y. Watanabe*, Y. Yanagisawa, and S. Kumaki. Director, Japan Dental Hygienists' Association.

Japan's dental hygienist system was legislated in 1948, with training starting the

following year and the first graduates entering service in 1950. At present, over 32,000 are engaged in hygienic/medical practices in dentistry (as of Dec. 31, 1986).

1. Training

The first training programs in this country were for one year. However, with rapid progress in dental practices, it became necessary to revise the curriculum. The new system, enacted in April 1983, now requires two or more years of training under an updated nationwide program.

2. Services

The dental hygienist's role is to enhance the prevention of dental diseases and the improvement of oral hygiene. The earliest legislation defined the hygienist's services as providing preventive dental treatment under the direct supervision of a dentist. An amendment in 1952 expanded these services to include assisting dental practices in clinical situations.

Today, the present licensing system and the definition of services must again be revised to meet society's changing needs for dental services. In fact, the opinion trend has for years been calling for amendment of the relative laws.

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DEVELOPMENT OF DENTAL HYGIENE IN THE NETHERLANDS.

Since 1920 the use of auxiliary dental health professionals has been a topic of discussion. It took until 1968 before the first educational program at the Dental School of the University of Utrecht was established. In 1974 the last of the present 4 dental hygiene schools was started. Since then about 80 dental hygienists per year graduate in The Netherlands. An increase in the number of the students is a point of discussion at the present.

As to legislation the official recognition of the Dental Hygienist as a separate profession was assured with the passage of the DH Practice Act in 1974. Between 1970 and 1980 experiments and trials were made with various dental health auxiliaries. Only the profession of dental hygiene has survived.

The demand for the first dental auxiliary was based on the high caries incidence in children and prevalence reflecting the backlog in adequate dental care. The first dental hygienists were employed in the school dental service and public health dentistry. In 1978, 10 years after the start of the first DH school, 400 dental hygienists

had graduated and 88% are actively employed as dental hygienists. In 1988 1,010 dental hygienists have graduated, of which 80.2% are employed. The educational pre-requisites have become somewhat more lenient. In 1968 the highest high school (HBS-B or Gymnasium-B) was required. At present admissions are based on general high school pre-requisites and the opportunity for dental assistant school graduates to enter DH school has been made possible. The DDHA recently celebrated its 20th anniversary. In 1978 there were 268 members, and in 1988 that increased more than threefold to 810 members. Since 1968 the DH profession has not only gained a foothold in the health care system but has developed its own professional profile and stature.

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THE DENTAL HYGIENE EDUCATION AND PROFESSION STARTED IN SWEDEN 1968, AFTER DISCUSSIONS FAR BACK IN 1920.

The DH profession was introduced during a time when the dentists were fully occupied with the restorative dentistry, and that kind of dentistry was requested. For that reason the DH became pioneers in preventive dentistry. During these past twenty years the dental health has considerably increased, and today all members of the dental team are working with preventive dentistry to some extent.

The education has not been changed since 1968. It is a one-years programme on post-graduate level at the College for Health Professions economically sponsored by the Swedish Government. The first DH had a certificate and had been working as Dental Assistants for a long period of time. Today it is still necessary to have a certificate as Dental Assistant but no working experience is requested. Since one year we have an experiment with students without any background from dentistry, on a two-years programme. To start with there were only two schools and a small number of students — 20 per year. About 1975 there was a considerable increase in schools and students and today we educate about 170/year.

The tasks have been the same since the start, with an addition in 1981 giving the DH certificate to provide oral infiltration anesthesia.

In the beginning there was a great demand for DH but in the early 80s when the

number of students increased at the same time as for the dentists, the demand was decreased and a few schools had to close. Today when we have a decrease of dentists there is an increase in the demand for DH again, so the future looks pretty good for DH in Sweden.

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DEVELOPMENT OF DENTAL HYGIENE IN SWITZERLAND. V. Steinegger*. Dental Hygiene Association. Switzerland.

Dental hygienists in Switzerland were not permitted for several reasons. These included a poor understanding of the aetiology of gingival and periodontal disease and for dental political reasons. Some clinicians however, realised the necessity of auxiliary help in combating the massive dental and periodontal problems then existing. In the forefront of these endeavours was Prof. H.R. Muhlemann who despite enormous opposition succeeded in 1961 in appointing the first dental hygienist in the Department of Cariology, Periodontology and Preventive Dentistry, at the Dental Institute of the University of Zurich. The hygienist involved was Ms. B. Benson who trained in America.

At that time no hygiene schools existed in Switzerland and most hygienists were American trained. In 1965 the Swiss Dental Association gave the go-ahead to build a dental hygiene school in Zurich. The first students enrolled in 1973 and qualified 2 years later. Subsequently two other hygiene schools were opened in Geneva and Berne in 1976 and 1984, respectively.

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"FORTY YEARS OF BRITISH DENTAL HYGIENE". E.A. Gray, School of Dental Hygiene, Glasgow Dental Hospital, Glasgow, Scotland.

The table demonstration will show the training of dental hygienists over 46 years from its early start in the Royal Air Force through to the present day. It will show the location of the schools of Dental Hygiene in the United Kingdom. The syllabus for 1971 and 1988 will be shown as will the varieties of certificates presented on successful completion of the course.

The British Dental Hygienists' Association is forty this year and various photographs of the Association's meetings will be shown.

The objects of the Association will be shown as will samples of publications available to members.

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DENTAL HYGIENE IN THE USA — 75 YEARS OF COMMITMENT TO CARE. R. Nowjack-Raymer* and C. Tussing. American Dental Hygienists' Association.

The profession of dental hygiene in the United States celebrated its 75th anniversary in 1988. From its beginning, the dental hygienist has been defined as one who is versed in the science of health and the prevention of disease as part of total health. The table clinic will present a chronology of slides from the first licensed dental hygienist to major events which have shaped the profession as we know it today. Throughout the presentation the recurrent theme remains a commitment to care for all people.

In addition to reviewing a pictorial history, information will be available on the many activities/programs which take place through our professional organization — The American Dental Hygienists' Association. Self-instruction manuals, legislative packets, consumer oriented brochures, instruction materials and publications are some of the items which will be displayed.

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DENTAL HYGIENE IN AUSTRALIA — 1989 J.D. McNicol* Adelaide, Australia.

All but three states have legislation to recognise the practice of Dental Hygiene.

There is only one School for the training of dental hygienists in the whole of Australia and it is situated in Adelaide, South Australia.

All hygienists who wish to practise must register with either the South Australian or New South Wales Dental Boards having successfully passed their written and practical examinations.

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DENTAL HYGIENE IN CANADA. E. Brownstone. University of Manitoba, School of Dental Hygiene, Winnipeg, Manitoba.

The practice of Dental Hygiene was established in Canada in the year 1947 as was the first legislation pertaining to dental hygiene. Canadian dental hygiene today represents the "new face" of the profession. Advances in technology, changing practice patterns, alternate regulatory trends and other dynamic events and issues are unfolding.

This presentation will provide an overview of the current status of dental hygiene in Canada including: demographics, educational preparation and trends, regulation, practice patterns, professional organization and major influencing events and critical issues.

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THE DENTAL HYGIENE PROFESSION IN ITALY. Mary Rose Pincelli and Gianna Nardi.

Dental hygiene in Italy had its beginning in 1978. Prof. P. Laforgia of Bari may be given credit. He believed in its need and with his own enthusiasm and interest organized the first course affiliating it with the Univ. degli Studi-Bari. The school was approved May 30, 1981. The profession in itself was not recognized by the Minister of Health, but only by the Minister of Education, which meant that the graduates could not work in private practice but only within the univ.. 150 have graduated from this one school. In 1981 the Italian Dental Hygienist Association (AIDI) was founded with the idea of securing a legal recognition. Meetings and congresses were organized to promote, stimulate and develop a better profession. In 1982 a parliamentary committee was organized to outline and define the professional profile, duties and the basic requirements for admission and course curriculum. After much discussion and waiting, legal status was granted Jan. 26, 1988, thus allowing the hygienist to work throughout Italian territory. The problems confronting the profession are many and must yet be resolved, we have much to accomplish, but we are certain that our future looks bright and promising.

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PRESENT SITUATION — JAPAN. S. Okabe*, Y. Watanabe, Y. Yanagisawa and S. Kumaki.

Dental hygienists in Japan are governed by The Law Pertaining to Dental Hygienists and other laws defining their services, training and registration. Their services, as defined, consist of two functions: preventive dental services under the direct supervision of a dentist, and assistance in dental practices subject to the instructions of the dentist in charge.

Recently, reviews of dental hygienists' activities have led to mounting demands for the amendment of relevant laws. The reasons behind such calls can be summarized as: (1) the situation surrounding dental hygiene has changed greatly since the first legislation and subsequent amendments; (2) services expected of dental hygienists have changed considerably; (3) the education of dental hygienists has changed largely; and (4) the quality and ability of dental hygienists, in view of the above, have improved remarkably. The changes demanded, among others, are: (1) to transfer licensing authority from local government to the Minister of Health and Welfare, thereby enhancing the prestige of such qualification; (2) to change the law defining services so as to permit preventive dental treatment without supervision; and (3) to expand services to include dental hygiene instruction.

Japan Dental Hygienists' Association is now working energetically in related circles to promote this trend of change, rallying its membership towards these objectives.

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PRESENT SITUATION OF THE DENTAL HYGIENIST IN THE NETHERLANDS. Yvonne Mesman-Arnold, Head of the Information Office of the Dutch Dental Hygiene Association.

The present situation of the dental hygiene profession in The Netherlands is one of continuing growth and increased involvement in deciding its own future about education, legislation and employment opportunities. Since the first legislation, the DH Practice Act was passed in 1974, the profession has developed within this framework. Now that there are 1,010 licensed dental hygienists in The Netherlands there is a demand for expansion of duties and practice development. Adjustment of the DH Practice Act is now an issue at professional and government level.

The information office of the DDHA was set up in 1982 to acquire data as to employment opportunities, demand for dental hygiene care, manpower statistics, salary data etc. This data can give important guide-lines for legislation and licensing. Figures are presented of the number and type of inquiries, geographic distribution of the working force, practice settings and employment opportunities. Present issues of discussion are the surplus in dental manpower, the low number of dental hygienists compared to the number of dentists, the disparity between the number of licensed dental hygienists and the large number of jobs available. The lack of awareness of the effect of preventive measures, and lack of communication between dentist and patient has also been an obstacle to faster growth of the profession. Due to inadequate public health awareness and lack of financial coverage of dental hygiene care, an inaccessibility to dental hygiene care by the public, has resulted. At present independent practice is under discussion. Its ramifications are felt at government, professional and public level.

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DENTAL HYGIENE IN A TURBULENT WELFARE STATE — PRESENT NORWAY. Inger-Lise Bryhni and Liv Holm*. Public Dental Services in Akerhus County/Norway.

Norway has 4 mill. inhabitants, 4000 dentists and 500 dental hygienists. 80% of the DH are working in the Public Services and 20% in private practices.

A general prolongation of the DH education from 2 to 3 years is on the agenda.

Less tooth decay and fear of unemployment has led to the fact that fewer students want to enter the dental hygiene schools.

Many dentists look upon dental hygienists with more skepticism now than they did a decade ago when the market was big enough for both.

The social and health sectors account for increasing proportions of the budgets. Reductions and "cost/benefit" discussions in the dental health sections are hot issues on the agenda.

Demand for a larger number of dental hygienists, especially within the Public Dental Care System, will probably be a solution. Better recognition and marketing

of the dental hygiene profession, together with more continuing education is considered very important.

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DENTAL HYGIENE IN SWEDEN — PRESENT. K.E. Ohn*, M.C. Rolands-son. Falun College for Health Professions, Falun Sweden.

Sweden has 8 million inhabitants and about 2000 RDH. They are working over all Sweden, 40% in private practice and 60% in Public Dental Service. Most RDH are working with clinical tasks.

There are 11 Dental Hygiene schools in Sweden and it is a one-year program, which it has been from the start, 1968.

Fall 1988, a two-year program started as an experiment in five of the schools.

To work as a RDH in Sweden a licence from National Board of Health and Welfare is required which is received after graduation from a Swedish Dental Hygiene school.

Dental Hygienists are working under a general supervision of a dentist and are formally competent to:

Sampling of complementary anamnestic and diagnostic information.

Prophylactic measures against caries and periodontitis — on individual or group basis. Cause related periodontal treatment.

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PRESENT EMPLOYMENT CONDITIONS OF SWISS DENTAL HYGIENISTS. V. Steinegger*. Dental Hygiene Association. Switzerland.

Presently there are approximately 500 Swiss trained hygienists but there are some Cantons in Switzerland where no hygienists are employed. Most of the hygienists work for private dentists in cities, with 30% of them in Zurich. The average work-week is 32 hours, which in Switzerland is considered part-time; the average work-week being 42 hours.

The contract of employment is set out by the Swiss Dental Association. A hygienist is entitled to 13 salaries annually and 4 weeks paid vacation. Social contributions are deducted as required by Swiss law.

There are currently 3 hygiene schools in Switzerland located in Zurich, Geneva and Berne, approximately 80 hygienists graduate each year from these schools.

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"BRITISH DENTAL HYGIENE AFTER FORTY YEARS". E.A. Gray, School of Dental Hygiene, Glasgow Dental Hospital, Glasgow, Scotland.

British Dental Hygienists are controlled by law through the General Dental Council.

In 1988 the Council approved:

- Extension of course.
- Higher academic qualifications for entry.
- Previous dental experience prior to training.

The Council circulated a discussion document including:

- Further extension of training period.
- Alteration to entry qualifications.
- Extension of duties, e.g. Local Anaesthetic Infiltration.
- Possible removal of direct supervision in practice.

National Council for Vocational Training set up to approve all non-degree vocational qualification.

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DENTAL HYGIENE IN THE USA — THE DYNAMICS OF CHANGE. R. Nowjack-Raymer*. American Dental Hygienists' Association, Chicago, Illinois.

The mission of the American Dental Hygienists' Association is to improve the public's total health by increasing the awareness of and access to quality oral health care. The paper will discuss the dynamics of how such change is accomplished. Specifically, pertinent programs from the R.E.A.L. Strategic Operating Plan will be highlighted (R.E.A.L. is an acronym standing for Research, Education, Access to Care and Legislation).

Planning alone is, of course, insufficient to carry out program activities. The importance of the Central Office in Chicago and of ADHA's organizational structure will be explained.

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A PLAN FOR THE PROVISION OF DENTAL CARE FOR NONAMBULATORY PATIENTS. D. Bowes. Simcoe County District Health Unit, Midhurst, Ontario.

There is a proven need for dental services to the institutionalized and homebound elderly. In order to facilitate the provision of dental care to these residents of Simcoe County, the county was divided into five areas. A dentist "Team Leader" was appointed to become the liaison between the Dental Division of the Health Unit, and the CLCs and the dentists and denture therapists within these five areas who have expressed a desire to treat these citizens.

The Health Unit will provide screening, preventive services and staff education. Referrals for dental treatment will be forwarded through the "Team Leader" after permission has been given by a resident or the guardian. Following the examination by the dentist, a treatment plan is prepared for approval by the resident or the guardian.

Treatment will be rendered on site with basic portable equipment provided through the Health Unit. Instruments will be supplied by the individual dentist. Dentists are encouraged to refer patients to the denture therapists when appropriate but the decision will remain with the patient, resident or guardian.

The provision of dental care will depend upon the co-operation of all those concerned and the continued interest and support of the dentists and denture therapists.

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SELF REGULATION FOR DENTAL HYGIENE IN ONTARIO. L.J. Dempster*. Faculty of Dentistry, University of Toronto, Toronto, ON, Canada.

In 1983 the provincial government established the Health Professions Legislation Review (HPLR) who were given the task of developing new health legislation to meet the needs of the evolving health care system and its professions.

The first phase of the HPLR identified those health professions to be regulated, which included dental hygiene. The primary issue for Ontario dental hygienists became whether they should continue to be regulated under the existing licensing body (The Royal College of Dental Surgeons) or whether dental hygienists should function

as an independent group of dental health professionals, with full responsibility for their own regulation.

The Ontario Dental Hygienists' Association (ODHA) contended that the regulation of the dental hygiene profession by dental hygienists would best serve the dental health needs of the public of Ontario while ensuring equitable treatment of the profession.

With the decision to seek self-government, the ODHA has invested a significant amount of time, energy and expense in presenting its position to the HPLR. Activities to date include numerous submissions to, and meetings with, the Review and Ministry of Health officials, intensive discussion with dental and other regulated health professional groups, and a province-wide public relations campaign directed to all dental hygienists. Fundraising efforts have also netted in excess of 50,000 dollars.

On March 12, 1987 the Minister of Health announced that dental hygiene would be granted self-regulatory status.

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DENTAL HYGIENE SCOPE OF PRACTICE IN ONTARIO. L.J. Dempster*. Faculty of Dentistry, University of Toronto, Toronto, Ont., Canada.

In Ontario, the Health Professions Legislation Review is conducting the long overdue regulatory reform of the health care professions in Ontario. As part of their mandate they are addressing profession-specific issues including defining the scope of practice for each regulated health profession.

Criteria have been identified describing those activities which constitute significant risk of harm to a patient if performed or ordered by unqualified persons. The HPLR will regulate these activities as "licensed" or "controlled" acts. Those activities not considered harmful will be termed "general" acts. Together they describe the entire range of activities undertaken by that profession, namely their scope of practice.

The Ontario Dental Hygienists' Association (ODHA) has submitted a proposed scope of practice to the HPLR incorporating the philosophy of comprehensive dental hygiene care. Within the context of dental hygiene's scope of practice, issues such as supervision and accessibility to dental hygiene care are addressed, although not without considerable contention from the dental profession.

While a completion date for the HPLR is only speculated at this time, the ODHA expects new health legislation to be proclaimed in the not too distant future. Without question it will mean significant changes in health care in Ontario as we know it today. The specifics of dental hygiene's scope of practice as well as an update on its status will be provided at the time of presentation.

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PORTABILITY AND CERTIFICATION FOR DENTAL HYGIENISTS — A NATIONAL CANADIAN ISSUE. D. Gallagher. Canadian Dental Hygienists' Association Ottawa, Ontario, Canada.

The primary regulation issue for dental hygienists at the national level is portability amongst provincial and territorial jurisdictions of licensure.

The Canadian Dental Hygienists' Association (CDHA) has been active throughout the 1980s in the pursuit of one national standard for entry into practice. The main issue of concern is inconsistent requirements for entry into practice across the various licensing jurisdictions.

This paper describes CDHA's efforts to date and proposes recommendations for a National Certification Examination including rationale, model, table of specifications, evaluation, validation and on-going revision. Once approved it is likely that the process will become the responsibility of the proposed Canadian Dental Association Council on Certification of Dental Assistants and Dental Hygienists.

The development of this proposal was supported by a grant from the Canadian Fund for Dental Education and the Canadian Dental Hygienists' Association.

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THE GERIATRIC GENERATION. Nancy Graham.

The dental hygienist's approach to the treatment of the elderly deserves special thought and consideration. During the following twenty minutes, I shall review our obligation to the geriatric patient.

The assessment of the patient prior to periodontal treatment should include a complete medical history, a determination of his mental state, and his life expectancy. Often your patient will be remiss in his

description of past illnesses but, sometimes he cannot remember. It is disagreeable to some to reiterate one's ailments, because it serves as a reminder of the aging process. I am leading at this point into the medications the patient is currently taking, an aspect of this subject which I feel to be of tremendous importance to the hygienist's assessment of the patient. Treatment should be initiated only after complete investigation of all medications presently being consumed, and for what purposes. It is at this point a telephone call or a written request for information concerning that particular patient should be carried out. Mental state effects one's outlook on life and a patient in a state of deep depression is unlikely to consider extensive periodontal therapy, whereas a person who is looking forward to a happy tomorrow will be more likely to comply with a sensible treatment plan.

The "THREE C's" should never leave you while you are examining the geriatric patient. We must have common sense, consideration, and most of all compassion.

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A PRACTICAL QUANTITATIVE TECHNIQUE FOR OBJECTIFICATION OF PERIODONTAL HEALTH ASSESSMENT. J. Jacob* dental hygiene instructor, Seneca College Toronto, Ontario.

Since healthy tissues do not bleed, where there exists a degree of infection the dental hygienist or dentist can objectively guide the patient to attain a low to zero bleeding index score. The concept of a "picture of health" is a fundamental goal of the operator and it can and does become the goal of the patient. In a general practice it is possible to provide the patient with an accurate state of their dental health by systematically examining the status of their gingival tissues. With a periodontal probe six predesignated sulcular surfaces are gently probed and the number of areas and the amount of bleeding is recorded. This is the bleeding index score. Patients respond well to the use of the bleeding index score since it provides them with a measurable progress of their own efforts.

DENTAL HYGIENE WORKFORCE PARTICIPATION: A STRUCTURAL APPROACH. P.M. Johnson. Division of Community Health, University of Toronto, Toronto, Canada.

Participation of dental hygienists in the workforce is a key factor in service availability and personnel planning. This

study examines participation status (working or not), intensity (hours worked/week), and discontinuity (withdrawal, re-entry).

As a female-dominant occupation subject in the influence and control of another occupation, structural aspects of a dental hygienist's background and current personal situation (e.g., family status and role), occupation (e.g., regulatory controls), and workplace (e.g., pay, technology) hypothetically are related to participation behaviour. This model was tested using data from a 1987 census survey of dental hygienists in Canada conducted for the purpose (N = 6162; response = 89%).

The rate active in dental hygiene was 86.7%. Of those active, 67.5% worked 30 or more hours/week; of the total, 56.2% had worked continuously since graduation. Age of the youngest child was the major factor in participation. Family career, perceived skill level, workplace supervision, and criteria for renumberation are among variables of interest to planners and employers concerned with workforce retention, job satisfaction and productivity.

This study was supported by a NHRDP Research Training Fellowship.

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THE RAMIFICATIONS OF SELF-REGULATION OF DENTAL HYGIENISTS IN ONTARIO. L. Lunda Nickelson, 194 Varsity Row, Thunder Bay, Ontario.

On March 12, 1987, the Ontario Minister of Health, Mr. Murray Elston, announced that dental hygienists would have their own governing body. This decision was reached after extensive consultations as part of the Ontario Health Professions Legislative Review. As stated in a news release, dental hygienists are employed by dentists and this employer/employee relationship has led to regulatory disagreements such as those involved with supervision.

Two hygienists are elected to the 18 member Council. They have no vote at Council or on the other statutory committees.

This paper answers frequently asked questions about self-regulation. In addition to providing some visionary comments about the future responsibilities, it outlines issues that the Dental Hygiene Committee has deliberated.

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IMPLICATIONS FOR THE RECOMMENDATION OF XYLITOL IN PREVENTIVE CARE. H. Murray, K.F.L. & A. Health Unit, Kingston, Ont.

Xylitol is a sugar substitute which studies now show can make a significant contribution to helping individuals achieve optimum oral health. It has important implications for patients receiving preventive care in both the dental office or in community based oral health programs.

Animal studies and human trials have demonstrated that Xylitol is non-acidogenic/non-cariogenic.¹ Xylitol cannot be fermented by most oral microorganisms particularly *Streptococcus mutans*.²

Studies have been conducted around the world showing significant caries reduction in the Xylitol group as compared to the control with only a moderate amount of Xylitol.³ Some field studies caries reduction results are as follows: French Polynesia — 37%, Hungary — 45%, Finland — 33 to 58%, Montreal — 52%.⁴ Subjects have also exhibited reduced plaque accumulation and adhesion. When Xylitol is used on a regular basis, it appears to inhibit the growth of *S. Mutans*.⁵

For children and adults with high caries activity and for those patients with dry mouth syndrome, the recommendation of Xylitol sweetened gum between meals, could be an important addition to their preventive program.

As an adjunct to oral hygiene measures and preventive agents (fluoride, sealants), Xylitol can make an important contribution in helping patients achieve optimal oral health.

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NETWORKING: AN IMPORTANT STRATEGY FOR DENTAL HYGIENE. B.A. Zier*, Division of Dental Hygiene, University of Alberta, Edmonton, Alberta, Canada.

Networking is a process by which individuals and groups share ideas, information, strengths, problems and resources. Networking may be used to establish contacts for personal and professional development; to advance dental hygiene knowledge; to improve

dental hygiene practice and to facilitate collaboration on critical professional issues. Changes in professional boundaries and current pressures in dental care delivery systems make networking an essential process.

This paper proposes a conceptual design for networking that applies the dental hygiene process of assessment, planning, implementation, and evaluation. Where to network, how to network, and the benefits and risks of networking are discussed.

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SEM STUDY COMPARING SHARP, DULL, DAMAGED CURETTES AND ULTRASONIC INSTRUMENTS. M. Parma-Benfenati, M.T. Montesari, S. Parma Benfenati and D. Nathanson. Viale della Vittoria 54, 60123 Ancona, Italy.

The purpose of this study is to compare and evaluate the possible damage to the root surface after various type of periodontal instrumentation.

A well defined area on the mesial surface of 30 extracted single rooted human teeth was scaled by the same operator using 15 vertical and 5 oblique strokes. Four groups, of 6 teeth each, were scaled and root planed with a sharp Hu-Friedy Gracey Curette 7-8, with a dull HFGC 7-8 with a damaged HFGC 7-8 and with a Cavitron Ultrasonic, respectively. 2 teeth of each group were polished with pumice. 6 teeth served as the control group. A hard two step replica technique was adopted for all the samples. Replica and original specimens were photographed on the scanning electron microscope at X300, X600 and X2000.

The sharp curette has been proven to be the most proficient means for calculus removal and for achievement of an acceptable, smooth root surface. The dull curette left behind a thin layer of deposit, spread over the root by subsequent strokes. The damaged curette created a smear effect of the deposits and heavy scratches. The ultrasonic instrument seemed to have greater potential for producing root surface irregularities. Polishing seemed to eliminate microscopic scratches.

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ORAL HYGIENICS IN PATIENTS WITH CEREBRAL INFARCTION AND PARKINSON'S DISEASE. T. Mukaida* et al. Dept of Oral Surg Tokai Univ Sch Med, Kanagawa Japan.

Japan has become a society with a preponderately aging population. The average life span of the Japanese in 1947 was 51 years for males and 54 for females. By 1986 it had lengthened to 75 and 81 years respectively. And the Geriatric Health Act was enacted in 1982. It is designed to promote preservation of health and security of appropriate medical care for people in their old ages. However, dental examination is not included in health examinations stipulated by the law. There still remain a number of problems that ought to be settled for more detailed embodiment of the law.

Of dental diseases in Japan, periodontitis is highly prevalent and is found in 93% of the Japanese.

We are conducting oral health care for old patients, especially those with cerebral infarction and Parkinson's disease who are incapable of preserving oral hygiene. These patients lack the faculty of understanding due to the primary disease. Furthermore, they have had almost no opportunity to receive guidance on oral hygiene in the past. It was, therefore, difficult to introduce to these patients the habit of oral cleaning as a daily custom.

Through a long course of trial and error, we prepared a guidance manual and attempted to apply the manual to daily guidance activities.

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TODAYS AND FUTURE WORK SITUATION FOR DENTAL HYGIENISTS, BASED ON RECENT DATA AND RELATED TO THE PAY AND INSURANCE SYSTEM. H. van Herk. Consultative dentist of a Sickfund Co. in The Netherlands.

Since medio 1985, 2 million Dutch children till the age of 19 years, have rights on integral dental care. These children belong to a majority of the population that is compulsory insured. Data of this group will show, that about 70% of the dental treatment that is given belongs to the possible task of the dental hygienist and this percentage is increasing every year.

The insream of students on year basis for both dental hygienists and dentists will be

within a few years 120 each. So with unaltered policy the number of dentists and dental hygienists will be equal in future. Although dental hygienists could do 70% of the work on youngsters till the age of 19 in the Netherlands, most of the work is done by dentists on behalf of the lack of dental hygienists and small practices.

As there is no separate tariff for the treatments by dental hygienists and most of them are working for dentists there is a strain in the sphere of cost-effectiveness. One tariff system for both dentists and dental hygienists is not suitable anymore. An example of a new insurance system in which incentives are present to put dental hygienists to work will be given.

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DENTAL HEALTH EDUCATION FOR PRIMARY SCHOOLCHILDREN. H. de Waard. Municipality of Breukelen, the Netherlands.

The aim of the dental health education program is to raise the level of knowledge of primary schoolchildren regarding dental health and to become familiar with dental aspects. In the Netherlands regional educational programs regarding dental health have been introduced at a professional level fairly recently. The initiative in Breukelen was taken by local dentists and a local dental hygienist. The author got a great deal of freedom to develop the program. As a leading principle the subjects for each class were adapted not only to the children's ability to understand the issues but also to the dental problems prevalent at the age concerned. Educational materials were prepared by the author in the form of booklets with simple drawings of anatomical structures, dental materials, plates to be colored by the children, e.g. the contents of a dental room, healthy as well as less healthy foods etc, and a quiz testing whether children understood the subject just taught. In progressive order the following subjects are covered for the various classes: shedding teeth, tooth-brushing, a visit to the dentist, basic anatomy and physiology, healthy nutrition, orthodontics and prevention of tooth decay and periodontal problems.

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SUITABILITY OF NURSES AND SCHOOLTEACHERS AS ORAL HEALTH EDUCATORS IN GAZANKULU — A PILOT STUDY. U.M.E. Chikte, A.A. Brand, H.A. Lewis* and M.J. Rudolph. Department of Community Dentistry, University of the Witwatersrand, Johannesburg.

The WHO Three-Level Strategy proposes the use of non-dental personnel as providers of oral health education at the primary health care level (Barnes, 1983). Nurses and teachers by virtue of their frequent community contact are considered appropriate personnel. This study investigated the oral health status, knowledge, attitudes and behaviour of nurses (N) and teachers (T) in Gazankulu to establish their suitability as oral health educators. 48 nurses (1 male, 47 female) and 43 teachers (24 male, 19 female) with a mean age of 30 years were examined. Oral health status was recorded using WHO (1986) criteria for caries and CPITN. Information on knowledge, attitudes and behaviour was derived from a self-administered questionnaire. Clinical findings: 42% of the sample was caries free (N = 29%, T = 14%), mean DMFT was 3.6 (N = 4.6, T = 2.5), the missing component was highest N = 3.6, T = 1.8. CPITN findings: 63% of the total study population had calculus as the highest score, 12% had shallow pockets and 11% deep pockets, 91% required OHI, 86% prophylaxes and 11% deep pockets, 91% required OHI, 86% prophylaxes and 11% complex care. Knowledge of aetiology of caries, frequency of brushing and regular visits to the dentist was adequate. Attitudes: 84% agreed that dental disease can be prevented and 93% agreed on the value of preventive action. 28% of both groups believe that tooth loss is inevitable, and 36% believe that dentures are as good as one's own teeth. Reported behaviour indicated that 98% brushed their teeth regularly and 34% attend the dentist annually for a check-up. Knowledge and reported behaviour of both nurses and teachers suggest that they are suitable as oral health educators, although some attitudes reflect an element of fatalism about inevitability of tooth loss. Clinical findings of caries prevalence and periodontal treatment needs contradict reported behaviour. These findings bring into question the suitability of these nurses and teachers as oral health educators. Other criteria need to be investigated to further establish suitability.

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ORAL HEALTH OF THE VISUALLY HANDICAPPED ASIAN CHILDREN IN NATAL. S. Moola*, M.H. Moola and A.C. Vayag. Department of Community Dentistry University of Western Cape, South Africa.

Visual impairment as a handicapping condition in persons, includes blindness and partial sight (Shakespeare, 1975).

This study was undertaken to determine prevalent dental disease and plan future specialized services for them.

The sample comprised of an Asian school for the visually impaired in Natal. A total of 96 children ranging from 6 to 23 years old were examined. The examinations were conducted using WHO (1986) criteria.

The results of the sample show a Mean DMF(T) of 2,3 for the group. The oral hygiene status indicated that 50% have plaque in all surfaces. Less than 5% of the sample had gingivitis. These results indicate that the caries prevalence is low, compared to the overall DMF(T) in the Asian population. In comparison to the study of Kalfe (1983) in the Cape, the coloured children have six times as high caries prevalence than Natal DMF(T) 12,25. These results show that the main direction of planning oral health services would be towards an acceptable and efficient method of Oral Hygiene.

This study was supported by the Department of Health and Welfare (House of Delegates).

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PREVALENCE OF PERIODONTITIS IN YOUNG ADULTS IN SWEDEN. B. Soder*, P-O. Soder and L. Frithiof. Dept. of Periodontology, Karolinska institutet, Stockholm, Sweden.

The aim was to determine the prevalence of periodontitis among young adults in Sweden — and to study the effect of non-surgical treatment of single and multirooted teeth periodontally involved. From the registry file of all inhabitants in Stockholm 3200 were randomly selected, informed and called for examination. Fourteen per cent of 1,681 persons examined had inflamed pockets 5 mm or deeper at three teeth or more. 149 patients volunteered to participate in the study, 86 males and 63 females. They were examined before and after dental hygienist treatment. The mean treatment time was 3 hours per patient varying from 2

to 5 hours and the mean treatment period was 2.8 months varying between 0.4 to 9.8 months. During the dental hygienist treatment the plaque index decreased from 1.07 to 0.49, bleeding on probing from 88.1 to 48.7, calculus score from 1.11 to 0.05 and the mean number of inflamed pockets 5 mm or deeper per patient from 13.3 to 7.9.

51 patients were successfully treated with non-surgical treatment with a reduction of mean number of pockets 5 mm or deeper from 6.2 to 1.3 on single as well as multirooted teeth. The prevalence of periodontitis among young adults in Sweden was 14 per cent. After dental hygienist treatment, home care and non-surgical treatment there was a mean reduction of all diseased parameters. Complete healing on single as well as multirooted teeth with non-surgical treatment seemed to occur in patients with low number of pockets.

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CAMPAIGN TO PROMOTE PERIODONTAL DISEASE AWARENESS. Lars E.A. Folke, Lars-Ake Johansson and Lisbeth Stromberg*. Dept. of Periodontics, State Hospital, 301 85 Halmstad, Sweden.

Public awareness of periodontal diseases and the consequences thereof varies greatly. To promote early detection, self diagnosis and interceptive care, a public campaign was addressed to 107,000 households in the state of Halland, Sweden. The campaign was conducted during two weeks of September, 1986 and carried out by dental personnel. The theme "Periodontal Disease is Recognizable" was delivered to the public via posters, newspapers, radio, TV, video film and thirty-minute oral presentations to every company within the state having more than one hundred persons employed. Every household also received a professional postcard, in full color, explaining the early visible symptoms of periodontal diseases. Two weeks upon completion of the campaign a questionnaire was distributed to a randomly selected portion of the population in the age group of 20, 30, 40, 50, 60, 70 and 80 years of age. 78% complied with the questionnaire. Between 64.8-92.8%, depending on age group had noticed the campaign. The professional postcard was recognized by 63.9% of the target population while newspaper and TV conveyed the campaign message to 24.9% and 15.9% respectively. News media was less effective among the younger age groups. Both women (36.2%) and men (22.9%) were stimulated to conduct a self-examination as to symptoms of periodontal disease.

Twenty percent reported signs of disease which they were previously unaware of. Women, in general, demonstrated a greater interest in the campaign while both sexes (23.3%) reported that the campaign message had substantially enhanced their knowledge of periodontal diseases.

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AN ERGONOMIC STUDY DURING THE DENTAL HYGIENE ROUTINE WORK. A. Sheikholeslam and V. Ylipaa*. Faculty of Dentistry, Karolinska Institutet, Stockholm, SWEDEN.

In an extensive study recently in Sweden revealed that the dental hygienists in general, had a higher frequency of the musculoskeletal symptoms in shoulder, neck and arm than the controls. Constrained working postures and repetitive arm movements are ergonomic factors believed to be associated with these disorders. The purpose of this study was to investigate electromyographically (EMG) the ergonomic nature of the hygienist-work. The material consisted of ten hygienist students without signs and symptoms of cervico-branchial syndrome. The electrical activity from trapezius and supraspinatus muscles was recorded during the working-postures and scaling-work. The results of EMG analysis revealed that in general, the working-postures as well as the scaling-work composed mainly of a continuous static contraction without any clear relaxation phase. Moreover, the levels of relative postural loading and static loading component during the scaling-work are above the limit, which have been permitted ergonomically in a prolonged work process. The results of present study suggest that, it seems likely the prolonged static contraction of neck and shoulder muscles during the work is a factor for development of this disorder.

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ORAL HEALTH SCREENING AND NEW APPROACH. G.K. Barnby — Marks and Spencer Place, London.

Health screening has been a feature of a companies welfare programme for nearly 50 years. This has included dental screening which has been offered free to staff at work.

With the development of the WHO CPITN index, a wider oral health screening was

introduced to monitor caries, periodontal health and other pathology. This was introduced to 270 sites in the UK in 1988 screening a potential workforce of 5000.

Targeted health education was also provided by a team of oral hygienists/health educators by referral from the inspecting dentist. Initial results and the problems encountered will be discussed and conclusions will be drawn to give guidelines for introduction of this type of scheme in other workplaces. Results of the screening will also be presented broken down by CPITN status and treatment need.

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TARGETED DENTAL HEALTH PROMOTION. Mrs. S.E. Goss — Marks and Spencer Place, London.

Following the introduction of a nationwide oral health screening programme, targeted oral health advice was offered by the company through a team of oral hygienists. Those at risk to periodontal disease and recurrent caries received individual advice.

A questionnaire asking about the relative importance of a variety of personal needs, regarding the value of teeth was given to individuals who had been selected by the visiting dentist. This highlighted the important and non-important factors for each individual and this information was used in focussing advice for staff in 6 stores in the UK.

The findings showed that this approach had a value to both hygienist and patient especially when backed by other health education material.

The conclusion drawn from this study is that this approach facilitated the introduction of advice for both hygienist and patient, resulting in a behaviour change of improved oral hygiene.

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PEER TEACHING PROGRAMMES FOR DENTAL HEALTH EDUCATION OF YOUNG ADULTS. Mrs. R. Khan.* School of Dental Hygiene, University of Manchester Dental School, Manchester, United Kingdom.

The concept of peer teaching is consistent with current philosophies in education

which are moving towards decentralisation of teaching and more individualisation of instruction.

Barriers to communication are often exaggerated when information is given by a person in authority and wide differences in education, race, age and class can cause problems between health educators and inner city adolescents.

This presentation will describe a community programme for adolescents, using a peer group teaching method and discuss the effect of the programme on the dental health of both "tutors" and "pupils".

Results will show that there are less barriers to communication when using this method of teaching. However, the importance of using programmes planned and directed by trained dental personnel such as dental hygienists is highlighted.

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GLUCOCORTICOSTEROIDS: WHAT THE DENTAL TEAM SHOULD KNOW. B.S. Brown*. Department of Dental Hygiene, The University of Rhode Island, Kingston, Rhode Island.

Increased use of glucocorticoids (steroids) in systemic disease treatment requires special dental management. There is much disagreement as to the indications, efficacy, safety and therapeutic regimen of steroids. After over thirty years of use, there is still much confusion as to how to handle the patient who is on steroid therapy.

The purpose of the paper is to familiarize the dental team with the physiology and pharmacology of steroids within the body and to provide an understanding of and treatment of the patient who is or who has in the past been treated with glucocorticoid steroids.

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EMPLOYMENT OF DENTAL HYGIENISTS IN STATE PUBLIC HEALTH PROGRAMS. T.S. Deal*. Illinois Department of Public Health, Rockford, Illinois.

The role and personnel status of dental hygienists in state public health programs have not been documented, according to the American Dental Hygienists' Association and the National Institute of Dental

Research. In October, 1987, a 13 page questionnaire was mailed to the 55 U.S. State and Territorial Dental Directors requesting information on dental hygienists who are employed by the state in public health positions. The questionnaire was divided into three categories: educational services; clinical services; and hygienists who divide their time between clinical and dental health educational services. Questions in each category requested information on job title, educational requirements, salary, benefits, and programmatic areas of involvement. The purpose of this survey is to document the role and extent of participation by dental hygienists in state public health programs.

Forty-eight states responded to the questionnaire with 37 states employing dental hygienists in state public health programs. Twelve percent of the educational services and seven percent of the clinical services employing hygienists are in supervisory or management level positions, with advanced degree requirements not necessarily a factor. Only 61 percent have water fluoridation educational programs which, considering the known benefits of community water fluoridation, is surprisingly low. The survey results may be used to assist administrators in developing appropriate programs utilizing dental hygienists.

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APPLICATION OF SALIVARY SUBSTITUTES FOR RADIATION THERAPY PATIENTS. A. Eshenaur. Thomas Jefferson University, Philadelphia.

Head and neck radiation causes irreparable damage to the salivary glands, resulting in compositional changes in the saliva and a decrease in salivary output. These salivary changes compromise the patient's normal physiologic functions, which are further constrained by the pain from the radiation-induced mucositis. Salivary substitutes are utilized to relieve the symptoms of xerostomia and to aid in the restoration of normal oral functions. This pilot study examined the effects of two forms of application of a salivary substitute on relief of symptoms of xerostomia and mucositis. Results of the study revealed that there were no statistically significant differences between the groups for the form of salivary substitute used and the degree of xerostomia. No statistically significant relationship

existed between the degree of xerostomia and the degree of mucositis, independent of the form of salivary substitute used. Use of a salivary substitute did not have an effect on the number of functional disorders experienced by the patient. Additional research is needed to document the use of salivary substitutes as this information may help dental hygienists provide oncology patients with salivary replacement therapy for better oral health.

This study was funded by the Research Foundation of the American Dental Hygienists' Association.

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DRUG-INDUCED GINGIVAL HYPERPLASIA. A. Eshenaur* and T. Hassell. Thomas Jefferson University, Philadelphia.

Gingival hyperplasia is a lesion found among epileptic patients taking Dilantin (phenytoin). Recent citations in the literature state that use of several new drugs has been associated with a hyperplastic gingival response. Several calcium channel antagonists, including Procainamide and Adalat (nifedipine), Bayotensin (nitrendipine), and Felodipine (to be released in 1988-89) reportedly cause overgrowth. Hyperplasia has also been found in patients taking Sandimmune (cyclosporine), an antirejection drug for organ transplants; Blenoxane (Bleomycin), an anti-cancer agent; and Depakene (sodium valproate), an anticonvulsant. Clinically and histologically, the appearance of the overgrowth is the same; however, the mechanism of action by which the hyperplasia occurs may differ. It is known that these drugs interfere with calcium metabolism, a variable which may affect collagen metabolism. Gingival hyperplasia poses a significant management problem for both patients and dental professionals. While esthetics may be of initial concern, emphasis should be placed on periodontal and occlusal changes as well. While oral hygiene may not prevent overgrowth, it is essential to reduce inflammation and possibly the severity of the overgrowth. Further research is indicated for continued investigation of this drug manifestation.

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DENTAL HYGIENE CONTRIBUTIONS TO FORENSIC ODONTOLOGY. J. Rychlak* and A. Eshenaur. Thomas Jefferson University, Philadelphia

Increased incidence of mass disasters, accidents, missing and abused children, and crime-related deaths have resulted in an estimated 2,000-10,000 unidentifiable bodies in the United States each year. In bodies which are not well preserved, the most common methods of identification, including fingerprints and visual recognition, are useless. The dentition, often a site of chronic breakdown throughout life, ironically outlasts all other body tissues after death. The remaining dentition, unique to each individual, serves as a blueprint which may lead to a positive body identification.

Data collected routinely by dental hygienists results in an updated document of the patient's current dental status. Accurate dental documentation, including radiographs, intraoral photography, study models, and dental chartings is critical for antemortem and postmortem record comparison. In the event of a body identification investigation, the dental hygienist can provide vital information by offering knowledge and dental expertise. As integral members of the multidisciplinary forensic team, dental hygienists can educate dental professionals as to the importance of thorough record keeping and standard case documentation practices. Future research is indicated for the development of training programs and standard criteria for forensic dental hygiene practice.

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PHOTOGRAPHY IN THE DENTAL OFFICE. Rebecca Tabor*.

Most dental professionals know very little about photography, yet we find many uses for photography in the dental office. Among these uses are case presentations, patient education, public relations, continuing education and legal documentation, to name a few. This paper discusses the many uses of photography and provides the practitioner with the basic knowledge needed to begin using photography in the dental office. A short video tape will be utilized in conjunction with the presentation.

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MULTIPLE GOALS DURING TREATMENT OF A PEDIATRIC DENTAL PATIENT. J. Gluch-Scranton, Thomas Jefferson University, Philadelphia.

Previous studies of dentist-child interaction have described behavioral suggestions for control and/or management of child's behavior to approximate professional expectations for appropriate behavior during dental treatment. Many studies have examined the interaction from the dentist's professional viewpoint; no studies examine the relationship from the dual viewpoint of practitioner and child as they complete the dental visit. The purpose of this study is to describe the interaction of a dental hygienist and a four year old dental patient in terms of their mutual goals for routine dental hygiene care. Microethnographic analysis (Erickson and Schultz) was used to interpret the social interaction during a videotaped dental hygiene appointment. Scollon's theme of continuity is used to explain the co-operative result of the dental visit even though disruptive behavior (screaming and kicking) is displayed by the child on several occasions during the visit. This paper illustrates the rhythmic nature of talk and organization of the visit by the dental hygienist and the patient as the factors responsible for the eventual positive conclusion of the dental visit. This paper also documents the divergent goals the dental hygienist, patient and mother have for dental hygiene treatment.

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INCREASING ACCESS TO QUALITY DENTAL HYGIENE CARE: AN EDUCATIONAL MODEL. J. Forrest and J. Gurenlian*. Thomas Jefferson University, Philadelphia.

Restrictions on the manner in which dental hygienists practice are determined by individual state laws, each state's Dental Practice Act, and how those are interpreted by the State Board of Dental Examiners. Previously, few states had laws or regulations which permitted dental hygienists to practice independently of a dentist's supervision in public or private settings. These restrictions on the way hygienists practiced were perceived by many to be a barrier to expanding access to preventive dental and dental hygiene care. Recently, the number of states that have eased the restrictions related to dental hygiene practice has increased. More hygienists have actively pursued legislation that would permit minimal supervision, and one state, Colorado, secured unsupervised practice. In addition to these legislative changes, the

ADHA has made a commitment to expand the scope of dental hygiene practice. Given this focus, it is critical that dental hygiene practitioners receive the appropriate education to support their providing care directly to the public, functioning independently as licensed professionals. The purpose of this paper is to propose an educational model which will describe the advanced clinical and management skills necessary to practice unsupervised. Implications for how this model will increase access to care will also be addressed.

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THE EFFECT OF A COMPUTERIZED DENTAL HEALTH EDUCATION PROGRAM. D.E. Huntley*, The Wichita State University, Wichita, Kansas.

Computer programs have been used successfully in medical patient education, but have not been used in dentistry. A computer program on the reasons for brushing and flossing, the Bass method of brushing, and flossing was tested in a general dental office. 58 adults were randomly assigned to the experimental or control group. The control group received traditional patient education; the experimental group viewed the computer program. The dependent variable was number of bleeding points on gentle probing, measured before the educational session and at 2 weeks and 4 months post-treatment. There were no significant baseline differences between subjects in the experimental and control groups, but there were significant differences between experimental (E) and control (C) subjects at 2 weeks ($t = 2.10$, $p = .04$) and 4 months ($F = 5.09$, $p < .01$). The mean number of bleeding points were:

	baseline	2 weeks	4 months
E	6.60	3.40	3.90
C	5.70	5.05	6.10

Computerized patient education can be a useful and successful alternative to traditional patient education.

This research was sponsored by a grant from Oral B Laboratories, Inc.

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CARPAL TUNNEL SYNDROME IN DENTAL HYGIENISTS. M.J. Mays*, D.E. Huntley*, J. Cuthbertson, S.A. Shannon. The Wichita State University, Wichita, Kansas.

Carpal tunnel syndrome (CTS) is a disabling wrist disorder affecting dental

hygienists. Occupations involving pinch pressure and repetitious wrist motions, particularly when the wrist is flexed or extended, have high incidences of CTS. The purpose of this pilot study was to compare wrist angle and pinch pressure in hygienists with and without symptoms of CTS. 8 hygienists with and 8 without CTS symptoms were videotaped for 80 seconds while removing artificial calculus from the mesio-facila of the lower left cuspid on a typodont. A cone socket Gracey #2 curet was attached to a handle fitted with a strain gage to measure pinch pressure during scaling. Each subject had 1/2" squares of black matte tape placed at the head of the radius and styloid process of the ulna, and at the head and base of the third metacarpal. Using freeze frame on the videotape, lines were drawn between the centers of the squares on the hand and forearm. Angles between the lines during greatest flexion and extension were measured. There were no significant differences in either maximum or mean pinch pressure between those with and without CTS symptoms. Those who reported CTS symptoms had significantly greater change in wrist angle during scaling ($p .05$). These results suggest directions for further research.

Sponsored by a grant from The Wichita State University.

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IMPACT OF FACULTY AND WORK ROLE MODELS ON PROFESSIONAL SOCIALIZATION. L. Kraemer. Thomas Jefferson University, Philadelphia.

This study examined the degree of influence faculty and work role models have on the recent dental hygiene graduate's value system and attitudes toward professionalism. Graduates of dental hygiene educational programs that prepared students for minimum entry to clinical practice were considered. A cross-sectional survey was used in this ex post facto research design to assess differences among and between dental hygiene graduates. A stratified random sampling technique was used to select a sample of 200 dental hygienists who graduated in 1985 from the 199 accredited dental hygiene programs in the United States. Sixty-one percent of the sample responded. Data was collected using three self-administered instruments, which included a demographic survey, Hall's Occupational Inventory and Gordon's

Survey of Interpersonal Values. Results of the t-test and multiple regression analysis indicate that the faculty role model variable was significant for one of the five components of Hall's Occupational Inventory, and that the work role model variable was significant for two of the six components of Gordon's Survey of Interpersonal Values. Results suggest the negligible impact of dental hygiene faculty role models or work role models in practice might be the result of a lack of consistency in defining the concept "profession" or the estrangement of practitioners from colleagues in the work environment.

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SURVEY OF DENTAL HYGIENISTS' KNOWLEDGE REGARDING PATIENTS WITH PSYCHOSOCIAL DISORDERS. M. Reveal* and S. Lemon. Oregon Health Sciences University, Portland.

Approximately one out of every six Americans suffer from some type of mental/emotional disorder. More people with psychosocial disorders are being diagnosed, and treated within the community rather than being institutionalized. It is more likely, therefore, that these people will receive oral health services at private dental offices or community clinics. There is no information available to indicate whether dental hygienists feel that they have received adequate educational experiences during their dental hygiene education concerning the oral needs and dental management of patients with psychosocial disorders.

The purpose of this study was to evaluate American dental hygienists' attitudes toward their dental hygiene educational preparation to care for these patients. 1000 randomly selected ADHA members were asked to respond to a questionnaire and 552 responses were compiled and tabulated. 63% of all respondents did not feel that they received adequate clinical preparation in school to treat emotionally disturbed patients. Only 31% agreed that they had sufficient didactic information about appropriate patient management techniques.

95% of these dental hygienists felt that dental hygiene programs should include information and education experiences about how to provide dental hygiene care for patients with psychosocial disorders. 76% of the respondents were interested in learning more about how to provide oral health services for these patients.

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PREPARING DENTAL HYGIENE STUDENTS TO TREAT PATIENTS WITH PSYCHOSOCIAL DISORDERS. S. Lemon* and M. Reveal. Oregon Health Sci. U., Portland.

More people with psychosocial disorders now live, and are being diagnosed and treated within the community, rather than being institutionalized. It is more likely, therefore, that these people will receive oral health services at private dental offices or community clinics. The purpose of this study was to determine the scope of didactic and clinical experience dental hygiene students receive in preparation for provision of services for people with psychosocial disorders.

A 22-item mail survey was circulated to all U.S. dental hygiene program directors. The response rate was 63% of the certificate/associate degree program respondents and 62% of the baccalaureate degree program respondents reported that didactic information on psychological disorders is included in their curricula, but 40% and 48% respectively reported that the amount of time devoted to this subject is not satisfactory; 54% of the directors of cert./assoc. degree program respondents and 55% of the directors of bacc. degree program respondents are satisfied with the clinical experiences students receive in treating people with emotional disorders; and only 15% of cert./assoc. degree program respondents and only 28% of bacc. degree program respondents believe that the dental hygiene needs of people with psychosocial disorders are adequately being met in your communities. These findings plus others indicate similarities in the preparation of dental hygiene students in the management and treatment of patients with psychosocial disorders.

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INCIDENCE OF NERVE DYSFUNCTION IN DENTAL HYGIENE PRACTITIONERS. J. Osborn*, J. Conrad, and K. Conrad. University of Minnesota.

Carpal tunnel syndrome (CTS) has the potential of becoming an occupational hazard for the dental hygienist. CTS results from impairment of the median nerve as it courses through the wrist to the

fingers. This study was conducted to detect peripheral nerve dysfunction in dental hygienists active in clinical practice.

Fifty-eight dental hygienists completed a health/information questionnaire and underwent vibrometry testing to detect nerve dysfunction. This testing consists of the non-invasive stimulation of the peripheral nerves through a series of seven standardized frequency vibrations. Both hands of each subject were tested. A control group consisted of 22 students, with no previous dental hygiene experience, entering the University of Minnesota Dental Hygiene Program.

Normal and abnormal vibrograms were identified for test and control subjects, and subsequently compared to whether or not each individual reported pain or numbness in the fingers. A significant difference was found between test subjects with pain or numbness who had abnormal vibrograms as compared to control subjects with no symptoms who had normal vibrogram. A similar comparison within the test group did not yield a significant difference. The vibrometer was able to detect differences in perception at the three highest frequencies indicating sensitivity to early nerve dysfunction. The findings suggest that vibrometry testing could aid in the early detection of CTS, thereby reducing its potential effects on clinical practice and facilitating treatment.

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DYNAMIC RECALL WITH RESULTS. P. Pietras* and B. Gustavson*. Dimensions In Dentistry, P.O. Box 9320, Anaheim, California.

Recall is a positive practice builder! Due to the competitive market in dentistry today, it is essential that every member in the dental team — dentists, hygienists, assistants, and front office personnel — be educated in how to institute and manage an effective, growing recall system. Recall is vital to the future of the dental practice!

Recall is cultivating your own patients, rescheduling their prophylactic appointments which promotes preventative dental care and keeps the patients in the practice. Essential to the clinician is the ability to determine the need for multiple prophylactic appointments and recall length for the individual patient's optimum dental care.

Methods include utilizing a "recall maintenance chart" which consists of

sending post cards, recall, and deletion letters to patients. Ideas are provided on how to create a more efficient scheduling system for more productive use of time. Suggestions on how to use the entire office staff to their fullest ability are included.

Dynamic Recall teaches the clinician how to institute and manage any recall system therefore creating a more productive and preventative practice to benefit both the patient and practitioner.

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DENTAL DISEASE IN 17TH CENTURY NORTH-EASTERN AMERICAN INDIANS. S. Saunders*, University of Rhode Island.

Archaeological research offers special insights on epidemiological trends and cultural transition in rapidly changing societies. Five North-eastern American Indian samples were examined, with special emphasis on a Narragansett Indian burial site (RI-1000) in Rhode Island. Four of the samples date to the 17th century, a period when the pressures of cultural transition wrought by European traders and settlers had a decided impact on diet, with the introduction of refined carbohydrates, and disease. Adult females at RI-1000 averaged 7.27 carious teeth per mouth compared to 5.27 for males. The RI-1000 samples and those from the Christian Indian Cemetery, a recently analyzed fifth burial site, had a significantly higher incidence of decay than the more inland tribes in the study. This new information supports evidence that the dentition serves as an indicator of dietary transition and dental disease trends.

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ANDROGYNY: A FUNCTION OF DEGREE. M.K. Scaramucci*, J.I. Laylon, P.A. Frese, University of Cincinnati.

Related to the issue of sexism is the concept of psychological androgyny, or the lack of tendency toward masculine or feminine traits. Studies have examined psychological androgyny through administration of the BEM Sex-Role Inventory and the Guilford-Zimmerman Temperament Survey. Whereas one researcher concluded that dental hygiene students are stereotypically feminine, another

researcher reported the tendency toward traditionally masculine traits. Both researchers utilized samples consisting solely of baccalaureate students. This paper explores the issue of psychological androgyny, the impact that sex-typing has on the profession of dental hygiene, and the results of a study examining androgyny among dental hygiene students.

Three hundred and twenty-one first and second year dental hygiene students representing four geographic regions within the United States were sampled. The sixty item BEM Sex Role Inventory was administered to determine the extent of masculinity, femininity, and androgyny within this sample. Comparisons were made by degree program class status, and geographic location. The authors tested the hypothesis that baccalaureate degree seeking dental hygiene students were more androgynous than associate degree seeking dental hygiene students.

Data were analyzed by a general linear model for unbalanced designs and chi square to determine significance. Results indicated that students in all dental hygiene programs are most frequently sex-typed as feminine with androgyny as the second most frequent sex-typed characteristic. There was a significant difference in psychological androgyny when comparing students by degree program, with a greater number of baccalaureate degree seeking students characterized as androgynous.

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THE CONTEMPORARY DENTAL HYGIENE STUDENT: A COMPARATIVE ANALYSIS BY DEGREE PROGRAM. M.K. Scaramucci*, Univ. of Cincinnati, C.T. Kee, and M.L. Darby, Old Dominion University.

Changes have occurred over the past 15 years in the quantity and quality of students entering Dental Hygiene Pro-

grams. These changes affect student recruitment, admissions, oral health care, and the maturation of Dental Hygiene as a profession. Because of the significance of these issues and the need for effective recruitment and admission strategies, it is necessary to identify attitudes and decisions involved in selecting dental hygiene as a career. The purpose of this investigation was to develop a profile of the contemporary dental hygiene student in associate degree and baccalaureate degree programs that included demographics, social background and attitudes, and motivation toward dental hygiene.

Two hundred and ten first year dental hygiene students from six associate degree dental hygiene programs representing three geographical regions in the United States included in the convenience sample. A thirty-eight item questionnaire was designed and administered to students during their first semester of dental hygiene. The questionnaire was designed to obtain data related to: demographic characteristics, social background and attitudes, and motivational factors involved in a career choice.

Data was analyzed through frequency distributions for each item, cross tabulation, and Chi Square to determine significance. Results indicated that the contemporary dental hygiene student is a single, white female between 18 and 22 years old with no children, has a grade point average between 1.4 and 2.9, and is enrolled in the dental hygiene program of choice which is located within 35 miles of her hometown. The practicing dental hygienist was identified as the most influential person involved in the student's career choice. Income potential ranked first as the student's most important motivational factor influencing her career choice, while health services to others ranked second.

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THE EFFECTS OF A SESAME OIL MOUTHRINSE ON THE NUMBER OF ORAL BACTERIA COLONY TYPES. Mary Martha Stevens, Ph.D.

The primary etiology of infectious periodontal disease is bacterial plaque. Oral bacteria have been found to adhere to oil droplets. The purpose of this study was to investigate the changes in the number of bacterial colony types when a sesame oil mouthrinse was used.

Twenty-five subjects followed a specified daily oral hygiene regimen for four weeks. During weeks two and three, sesame oil was added. Swab specimens of the gingiva were collected daily. Subgingival probe specimens were collected at the end of weeks 1, 3 and 4. After inoculation and incubation, different colony types were counted.

Results of a single-factor repeated measures ANOVA revealed no significant within-subjects effect for bacteria recovered by swab, ($P < .173$). A significant effect was observed for bacteria recovered by probe, ($P < .001$). A Tukey post hoc test showed a significant decrease ($P < .01$) in the number of bacteria colony types after two weeks of oil rinse. A significant increase ($P < .05$) in bacteria colony types was observed after the mouthrinse was discontinued.

The findings suggest that sesame oil mouthrinse should be studied further as an adjunct to mechanical plaque control. Research sponsored by the College of Health Professions, The Wichita State University.

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- 2A B Present - Select Papers: Dental Hygiene Today: Representatives from: Australia/Denmark/Canada/Italy/Japan/Korea/Netherlands/Norway/Sweden/Switzerland/United Kingdom/United States.
- 3A B Future - Panel: Major issues and Trends: What will be the future of Dental Hygiene
Dr. David E. Barnes/Catherine Fooks/Dr. Jane Fulton/
Dr. Donald Lewis

FRIDAY - JUNE 30

- 4 Facilitating Dental Hygiene Research: Marnie Forgay/
Michelle Darby/Denise Bowen
- 5 Dental Hygiene Quality Assurance: Standards of Clinical Practice: Ellen Brownstone/Dr. Kathy Newell
- 6 Worldwide Dental Hygiene Education: Kate MacDonald/
Carol Ono
- 7 Dental Hygiene Practice - Scope, Legislation, Regulation Etc:
Anne Bosy/Joanne Clovis
- 8A B IDHF: Future Planning Workshop: Patricia M. Johnson/
Connie J. Tussing
- 9A B Guest Speaker: Dr. Thomas Rams: "Microbiological Diagnosis in Periodontics: Theoretical and Practical Considerations."
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MEMORIES

Letters to Dale Scanlan, Organizing Committee.

Congratulations on the super success of the Symposium. I enjoyed myself so much and was very impressed by the whole week. I am proud to be a part of the host organization. Please pass my thanks to your hard working committee.

— CANADA

... I was very happy time in Canada. I want to go to Canada again. My dream was to go International Symposium in Canada. I was glad to go to your country ...

— JAPAN

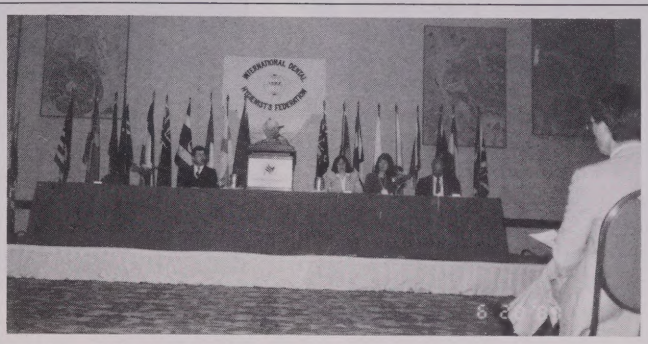


I wanted to let you know that I had a truly great life experience at Symposium. It was like living in a fantasy being surrounded by wonderful dental hygienists from around the world. All the pomp and circumstance, the educational experiences, the social events, the love and the laughter that many of us will always cherish — it was all very moving. I was very proud to call myself a dental hygienist, a Canadian, an Ontario'an.

— CANADA

... This International Symposium on Dental Hygiene was a great hope to me. Thank you for your kindness and dental hygienists in Canada ...

— JAPAN



Just a brief note to thank you for a well organized and stimulating Symposium. My first International Dental Hygiene Symposium but definitely not my last!

— SOUTH AFRICA



The International Symposium has been the highlight of my career as a dental hygienist — as I'm sure it was for many, many others. The work of the organizing committee, in quality and quantity, is tremendously appreciated. On behalf of ODHA and every dental hygienist in Canada — I thank you.

— ONTARIO DENTAL
HYGIENISTS' ASSOCIATION

Everyone who attended lectures found something new and was pleased with the program. The table clinics and poster presentations were interesting, and I thought the number of people interested in presenting free papers was gratifying. How we are growing! The evening affairs were great fun. I loved the wine/liquor glasses as well as the wonderful assortment of Canadian specialties, and the barbecue. The Opening Session was spectacular and the President's Luncheon was a delight. The closing session could have been a bit sad because of parting, but I think it even ended on an up beat. We are grateful for your efforts and those of all the dental hygienists and, yes, their husbands/families/friends, who contributed to make the 11th International Symposium on Dental Hygiene such a great success. If I have forgotten anything, it is not for lack of appreciation, merely a head still spinning in the clouds.

— U.S.A.

Just a note of appreciation for all the hard work that made the Symposium terrific. I came away bursting with all sorts of different emotions (all positive). I'm booking for the Netherlands for my 2nd Symposium.

— CANADA



I am writing to express my congratulations and thanks to you, your committee, and everyone who contributed to making the International Dental Hygiene Symposium such a success. It was a special time which I would not want to have missed.

— CANADA

Congratulations. I want you to know that your program was well received by the participants from around the world. Ottawa dental hygienists were terrific hostesses and we are very proud of all your efforts.

— CANADA



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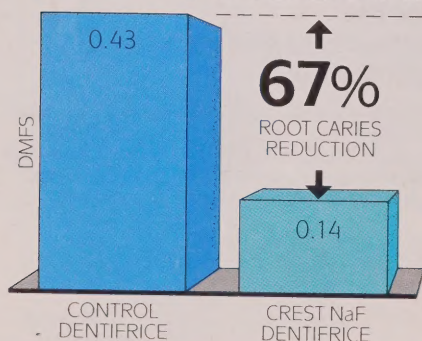
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